



Expanded Site Inspection
Final Report

LoBue #2
South Chicago Heights, Illinois
ILD 980 902 050

August 9, 1995

Prepared for:
U.S. Environmental Protection Agency
under Alternative Remedial Contracting Strategy (ARCS)
Contract 68-W8-0064, Work Assignment 33-5JZZ
ARCS Contractor Project 71280.119

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1.0 Introduction

On February 4, 1993, the Alternative Remedial Contracting Strategy (ARCS) contractor was authorized, by approval of the work plan amendment by the U.S. Environmental Protection Agency (USEPA) Region V, to conduct an expanded site inspection (ESI) of the LoBue #2 site in Cook County, Illinois.

The site was initially placed on the Comprehensive Environmental Response, Compensation, and Liability Act Information System on February 1, 1984, as a result of a request for discovery action initiated by the USEPA.

The facility received its initial Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) evaluation in the form of a preliminary assessment (PA) completed by the Illinois Environmental Protection Agency (IEPA) on July 1, 1984 (USEPA 1993). A screening site inspection report was completed for the site by a USEPA field investigation team (FIT) contractor on March 7, 1986. The sampling portion of the ESI was conducted in two phases. The first phase occurred from August 23 through 25 and on September 2, 1993, when a field team collected eight sediment samples, eight soil samples, and five waste samples. The second phase was conducted on December 6 through 8, 1993, after installation of four onsite monitoring wells. Four groundwater samples and one residential well sample were collected during the second sampling phase.

The purposes of the ESI have been stated by USEPA in a directive outlining site inspections performed under CERCLA. The directive states:

The objective of the ESI is to provide documentation for the Hazard Ranking System (HRS) package to support National Priority List (NPL) rulemaking. Remaining HRS information requirements are addressed and site hypotheses not completely supported during previous investigations are evaluated. ESI sampling is designed to satisfy HRS data requirements by documenting observed releases, observed contamination, and levels of actual contamination at targets. In addition, investigators collect remaining non-sampling information. Sampling during the ESI includes background and quality assurance/quality control samples to fully document releases and attribute them to the site. Following the ESI, USEPA site assessment managers assign the site a priority for HRS package preparation and proposal to the NPL.

USEPA Region V also requested identification of sites during the ESI that may require removal action to remediate an immediate human health or environmental threat.

2.0 Site Background

2.1 Introduction

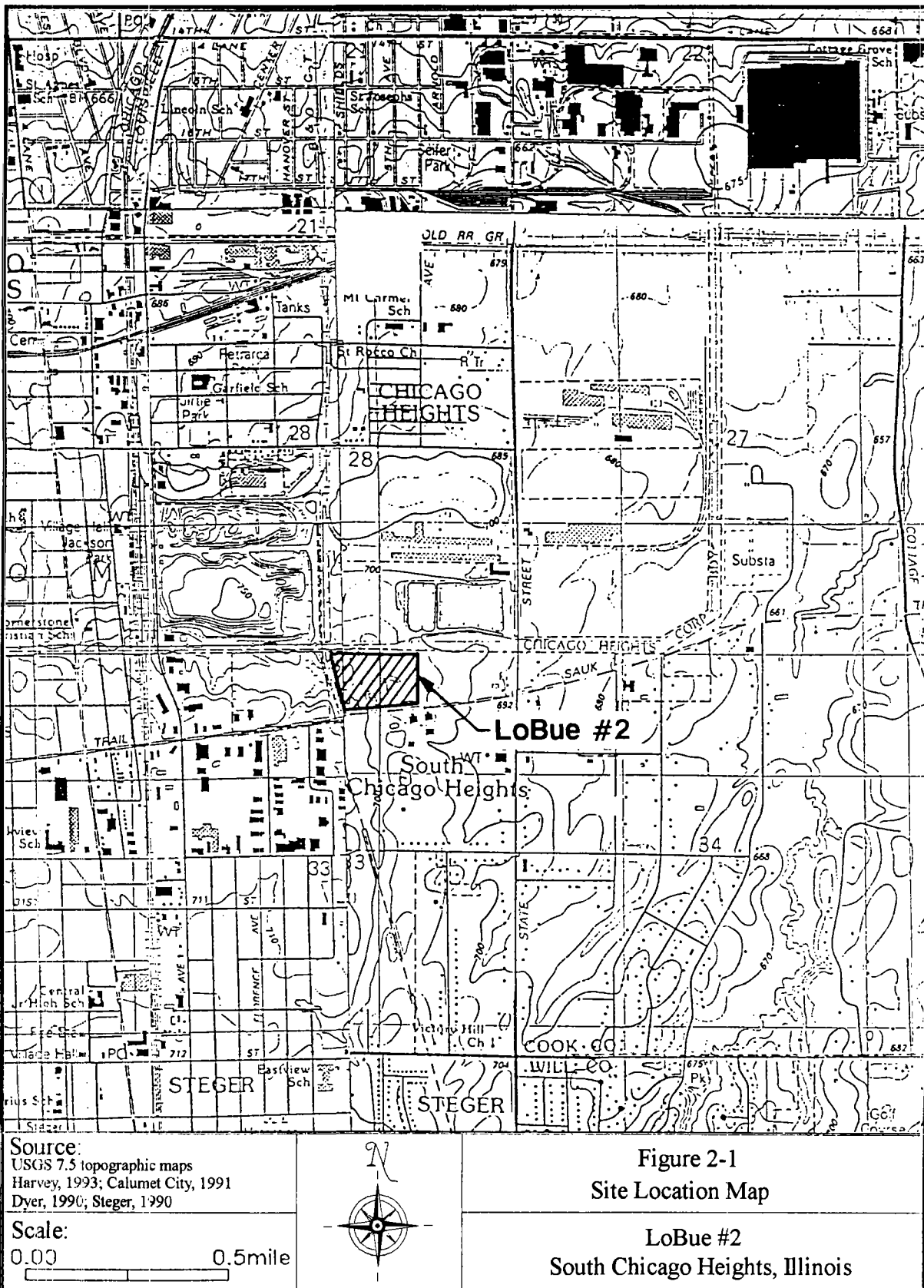
This section includes information obtained during the ESI and from reports of previous site activities.

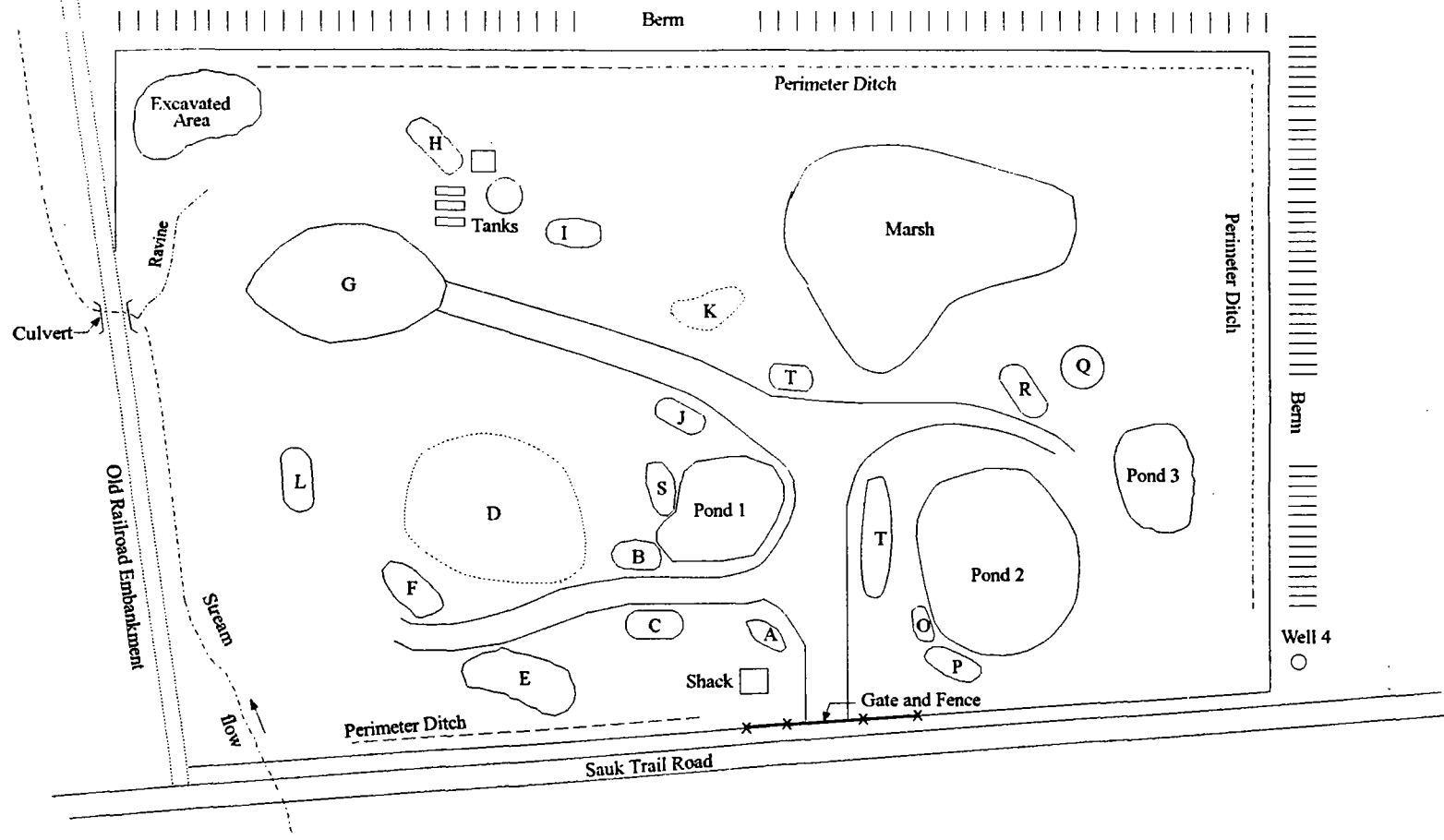
2.2 Site Description

LoBue #2 is a solid waste disposal facility located in South Chicago Heights, Illinois, on the north side of Sauk Trail Road, approximately one-third mile west of State Street. The 25-acre tract is in the northwestern quarter of the northeastern quarter of Section 33, Township 35 North, Range 14 East of the Third Principal Meridian, Cook County, Illinois. Figure 2-1 shows the site location.

Debris and waste piles were scattered throughout the site. The piles contained foundry wastes (sand, slag, ash), scrap metal, brick, concrete, wood, soil, and demolition debris. Figure 2-2 is a site sketch. Three ponds and a marsh were located in the central and eastern portions of the site; the ponds were likely man-made. Perimeter ditches and berms were located along the northern and eastern property lines. A perimeter ditch was also located along part of the southern property line. An intermittent stream intersected the southwestern site corner. A small ravine from the site converged with the stream. The stream exited the site through a culvert under embankment from an old railroad line. The abandoned railroad right-of-way marked the western property line. Landfill monitoring well 4 was located near the southeastern site corner. A gate and small amount of fencing were located at the site entrance, along Sauk Trail Road, to restrict vehicular traffic. Dirt roads lead from the gate into the property. The site is classified as temporarily closed; however, evidence, such as fresh heavy equipment track marks, indicate the site has been active recently. A final cover has not been constructed over landfilled areas. The site is located outside the 500-year floodplain (Federal Emergency Management Agency 1979).

Adjacent property use was primarily light commercial and industrial. An open field is east and an auto junk yard is west of the site. A landfill, an open field, and sanitary district sludge lagoons are located northwest, north, and northeast of the site, respectively. South of the site, across Sauk Trail Road, is an open field and several commercial establishments. Residential properties within one-quarter mile of the site are sparse; the nearest residence is approximately 500 feet southwest of the site. Land use within 4 miles of the site is residential, commercial, and industrial. Rela-





* Page 2-4 lists waste pile descriptions.

Source: ESI April 7, 1993 Site Reconnaissance

Scale: Not to Scale

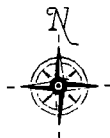


Figure 2-2
Site Sketch

LoBue #2
South Chicago Heights, Illinois

<u>Waste Pile</u>	<u>Waste Pile Contents</u>
A	Soil, brick, concrete, wood, demolition debris.
B	Soil, slag, brick, concrete, wood, and demolition debris.
C	Rubber, belts, hoses, wood, and scrap metal.
D	Soil, slag, rebar, concrete and brick fragments, and debris.
E	Brick, rock, wood, soil, and debris.
F	Melted iron, scrap metal, gears, and soil.
G	Black ash with pebbles.
H	Black, solidified tar-like substance on ground.
I	Small waste sand pile (possibly foundry sand), with some wood and metal debris.
J	Scrap wrought iron.
K	Scattered concrete, brick, and scrap metal.
L	Brick, concrete, rebar, slag, and soil.
O	Small soil mound, brick fragments, and rebar.
P	Soil mound and scrap iron sheets near pond water.
Q	Gray slag, crushed scrap metal, and concrete debris.
R	Soil mound.
S	Soil, slag, and debris.
T	Soil, slag, and debris.

Source:

ESI April 7, 1993 Site
Reconnaissance

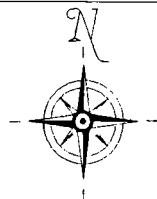


Figure 2-2 (Continued)
Site Sketch

LoBue #2
South Chicago Heights, Illinois

tively dense urban areas are north, west, and south of the site, starting approximately one-half mile from the site. Appendix A contains the site 4-mile radius and 15-mile surface water route map.

2.3 Site History

2.3.1 Operational History

The LoBue #2 site was originally a clay mine; clay was excavated for use in making bricks. According to a permit application, filling operations at the site began in 1952 (Walter H. Flood & Co., Inc. 1973). IEPA site inspections began in 1970; they classified the site as an illegal open dump because wastes had been dumped into open pits and buried. Wastes included household refuse, demolition debris, appliances, and oily wastes (IEPA 1984). The LoBue Excavating Company received a state permit to operate a solid waste disposal facility at the LoBue #2 site in December 1975. The site was only permitted to accept specific wastes: foundry sand, slag, cinders, soil, concrete, brick, asphalt, cardboard, and demolition material (IEPA 1975a, IEPA 1975b). The permit also required quarterly groundwater monitoring.

Stockpiles also have been used to store waste materials onsite, including foundry wastes, scrap metal, brick, wood, demolition material, bagged refuse, 55-gallon drums, tires, and other solid wastes. A salvage operation was also conducted for the reclamation of steel scrap from foundry sand waste piles. IEPA records indicate the black tar-like substance on the ground surface in the northwestern section of the site overflowed from an old railroad tank body in 1979 (IEPA 1984).

The LoBue Excavating Company filed for bankruptcy in 1985 (IEPA 1989). The IEPA classified the site as temporarily closed; however, site activity was noted during the ESI sampling visit. A final cover has not been constructed over landfilled areas.

The site property was inherited and is owned by several titleholders: Josephine, Minnie, Fred, Nick, and Charles LoBue; Dorothy Foushi; and Paulette Stracci (CBS 1989). Apparently, the site was part of a family-owned construction business, LoBue Incorporated and LoBue Excavating Company, operated by an older LoBue generation (ARCS Contractor 1993a).

2.3.2 Summary of Onsite Environmental Work

IEPA performed many inspections of the LoBue #2 site, beginning in 1970. A few site inspections included sampling of soil, surface water, leachate, and

groundwater. Many violations have occurred throughout the history of the site; cited violations include ponding of water onsite; acceptance of unpermitted wastes, such as paints and solvents; inadequate cover; and leachate problems (IEPA 1979, IEPA 1981, IEPA 1982, IEPA 1989). IEPA site inspections conducted in 1979 to 1980 documented many drums onsite, most of which were empty and some of which had their contents (paint wastes) spilled onto the ground (IEPA 1984). These drums were reportedly landfilled along with other wastes (Ecology and Environment, Inc. 1986).

In 1984, IEPA completed a PA for the LoBue #2 site, including USEPA Form 2070-12. A medium priority rating was assigned based on available data. Groundwater, surface water, and soil were identified as either potentially or allegedly contaminated (IEPA 1984).

In 1986, a USEPA FIT contractor completed a screening site inspection (SSI) for the LoBue #2 site, including USEPA Form 2070-13. Five surficial soil samples (one background sample and four investigative samples) were collected during the SSI and submitted to laboratories for full Target Compound List (TCL) and Target Analyte List (TAL) analyses. Analytical results showed that three of the investigative samples contained low levels of heavy metals, and one sample contained low levels of polynuclear aromatic hydrocarbons and pesticides (Ecology and Environment, Inc. 1986).

2.4 Applicability of Other Statutes

The LoBue #2 facility operated under permits issued by IEPA in 1975. Before 1975, the site was an illegal open dump. IEPA has performed numerous site inspections. Because of continued violations of the operating permits and the Illinois Environmental Protection Act, IEPA referred the site to the State Attorney General's Office (AGO) for enforcement action; the AGO has not filed a formal complaint (ARCS Contractor 1993b).

No record of Resource Conservation and Recovery Act (RCRA) activity concerning the site has been found. The site is not listed on the Region V RCRA notifiers list for Illinois (USEPA 1994).

3.0 Site Inspection Activities and Analytical Results

3.1 Introduction

This section outlines the procedures used and observations made during the ESI conducted at the LoBue #2 site. Sampling activities were conducted in accordance with the project's approved Quality Assurance Project Plan (QAPjP). Figure 3-1 shows sample locations; Table 3-1 summarizes sample descriptions and locations.

ESI samples were analyzed for organic and inorganic substances contained on the USEPA TCL and TAL by USEPA contract laboratory program (CLP) participant laboratories. Appendix B presents the TCL and TAL. Appendix C presents a summary of analytical data generated by ESI sampling. Appendix D contains photographs of the site and sample locations.

3.2 Site Reconnaissance

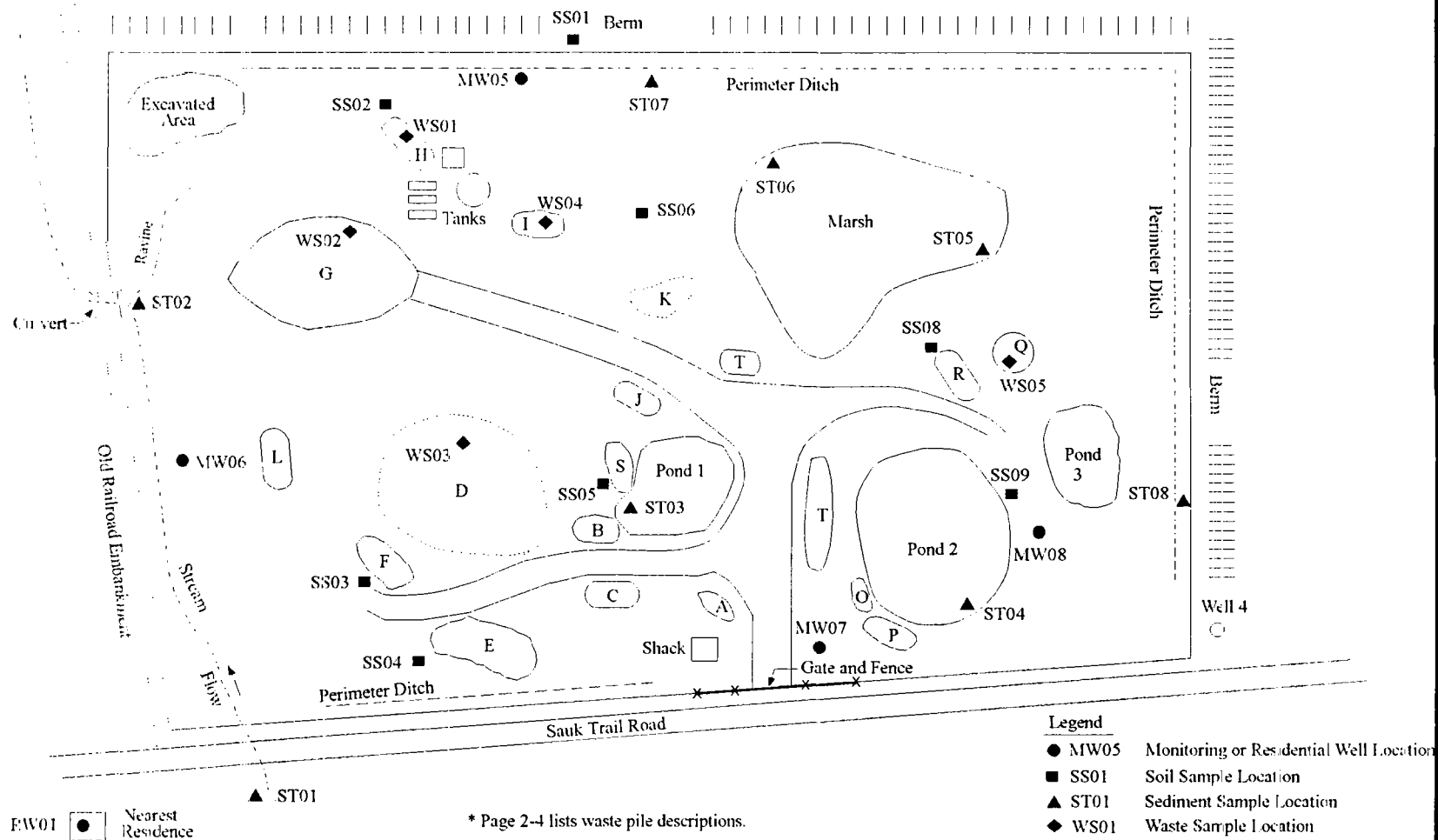
A field reconnaissance of the LoBue #2 site was conducted on April 7, 1993. This visit included a visual site inspection to determine the status, facility activities, health or safety hazards, and potential sampling locations.

By prearrangement with Charles LoBue, one of the property owners, the entrance gate was to be unlocked to allow vehicular access to the property. Mr. LoBue also agreed to meet the field team at the site after his workshift ended. However, when the field team arrived at the site, the entrance gate was locked. The field team entered the property by walking around the entrance gate.

Two IEPA representatives were onsite conducting a site inspection when the field team arrived. After the field team briefly explained the format for the reconnaissance, the IEPA representatives continued their site inspection.

The reconnaissance began with a walk-through of the property, noting existing site conditions, drawing a site sketch, and taking photographs.

Supposedly, the site was inactive. The gate was locked, and no workers were onsite. However, fresh tire tracks on the dirt road onsite and recently moved soil on the southwest section of the property indicated some activity was still occurring onsite. The perimeter of the site is unfenced. Perimeter ditches, large berms along the northern and eastern property lines, and the abandoned railroad embankment along the western property line make site access difficult; however, site access can be readily attained from the south. The eastern portion of the northern perimeter ditch



Source: ESI April 7, 1993 Site Reconnaissance

Scale: Not to Scale



Figure 3-1
Sample Location Map

LoBue #2
South Chicago Heights, Illinois

Table 3-1
Sample Descriptions

Sample No.	Depth	Appearance	Location
GW05	44.43 feet *	Turbid, slightly silty, strong odor	Monitoring well MW05 in the northern perimeter ditch, north-central portion of the site.
GW06	32.96 feet *	Turbid, silty, brownish tint, mucky odor	Background groundwater sample. Monitoring well MW06 near the western property line, east of the unnamed stream, west-central portion of the site.
GW07	63.0 feet *	Turbid, silty, mucky odor	Monitoring well MW07 near the southern property line, northeast of the entrance gate.
GW08	71.6 feet *	Turbid, slightly silty, grayish tint, mucky odor	Monitoring well MW08 in southeastern section of the site, southeast of pond 2, approximately 100 feet north of Sauk Trail Road.
RW01	---	Mostly clear, strong odor	Residential well approximately 500 feet southwest of the site, south of Sauk Trail Road.
RW02	---	---	Sample was to be collected from a residential well along 30th Street, approx. 0.4 mile south of the site. The well could not be located, so the sample was not collected.
ST01	0 - 6 inches	Silty clay, dark grey, organic, mucky odor, wet	Background sediment sample. West bank of unnamed stream, upstream (southwest) of the site, approx. 50 feet south of the bridge at Sauk Trail Road.
ST02	0 - 6 inches	Clay with silt and organic material, dark grey, wet	Northeastern bank of unnamed stream, approx. 5 feet east of culvert under railroad embankment at the western property line, where a small ravine from the site empties into the stream and the stream exits the site.
ST03	0 - 6 inches	Clay with silt and organic material, dark grey, wet	Southwestern bank of pond 1, in the central portion of the site, near soil, slag, and debris waste piles.
ST04	0 - 6 inches	Sandy silt with some organic muck, dark grey, wet	Southern bank of pond 2, in the southeastern section of the site, approx. 25 feet east by northeast of waste pile P.

Table 3-1 (Continued) Sample Descriptions			
Sample No.	Depth	Appearance	Location
ST05	0 - 6 inches	Silt, dark brown to black, mucky organic odor, wet	Southeastern edge of marsh in the northeastern section of the site.
ST06	0 - 6 inches	Silt, black, organic mucky odor, wet	Northwestern edge of marsh in the northeastern section of the site.
ST07	0 - 6 inches	Mucky organic matter, dark, with grey clay and some small pebbles, wet	Southern bank of northern perimeter drainage ditch, in the north-central portion of the site.
ST08	0 - 6 inches	Silty clay with organic matter, grey, wet	Eastern bank of eastern perimeter drainage ditch, along eastern property line, approx. 100 feet north of Sauk Trail Road.
SS01	0 - 6 inches	Top soil, light brown	Background soil sample. On south side of berm along northern property line, approx. 50 feet south of power lines that run adjacent to the northern property line. Near center of northern property line.
SS02	0 - 6 inches	Topsoil, brown, damp	Approximately 6 feet northwest (downgradient) of waste pile H, in the northwestern section of the site.
SS03	0 - 6 inches	Sand with some topsoil and small slag pieces, black, moist	Adjacent to western edge of waste pile F, in the southwestern section of the site.
SS04	0 - 6 inches	Topsoil with some sand, black, moist	Adjacent to southwestern edge of waste pile E, in the southwestern section of the site.
SS05	0 - 6 inches	Silt with sand, black, moist	West of pond 1, adjacent to edge of waste pile S, in the central portion of the site.
SS06	0 - 6 inches	Topsoil, brown, damp	Approx. 150 feet south of the northern perimeter ditch, west of the marsh and north of scattered waste pile K, in the north-central portion of site.

Table 3-1 (Continued) Sample Descriptions			
Sample No.	Depth	Appearance	Location
SS07	---	---	Sample was to be collected north of marsh, adjacent to three crushed drums encountered during the reconnaissance visit. The drums could not be located because of heavy, tall vegetation, so the sample was not collected.
SS08	0 - 6 inches	Sand, dry	Adjacent to the northwestern edge of waste pile R, in the eastern portion of the site.
SS09	0 - 6 inches	Sand, brown, dry	East of pond 2, approx. 100 feet north of Sauk Trail Road, in southeastern section of the site.
WS01	0 - 4 inches	Black tar-like waste	Waste pile H, northwest of tanks, in the northwestern section of the site.
WS02	0 - 6 inches	Black ash with pebbles, granular	Waste pile G in the northwestern section of the site.
WS03	0 - 6 inches	Soil and slag with rebar, concrete and brick fragments, and debris	Waste pile D, which was graded by the scrap metal salvaging operation occurring onsite before and during the ESI sampling visit, in the southwestern section of the site.
WS04	0 - 6 inches	Foundry sand	Waste pile I in the northwestern section of the site.
WS05	0 - 6 inches	Grey slag with crushed scrap metal and concrete debris	Waste pile Q in the eastern section of the site.

* Depth from top of riser pipe to groundwater level.

and most of the eastern perimeter ditch contained standing water. The small intermittent stream that intersected the southwestern site corner flows in a northwesterly direction; construction debris was scattered around the stream.

No buildings were onsite, and power lines ran along most of the site perimeter. A small guard shack, in poor condition, was located near the site entrance. Many waste piles were located onsite, most of which consisted of wrought iron, scrap metal, brick, concrete, wood, soil, and demolition debris. Some piles and some scrap metal were removed from the site when the field team returned to the site for the sampling visit.

Three cylindrical tanks and two above ground tanks (one of which appeared to be a silo) were located in the northwestern section of the property. The tanks were apparently discarded there. The three cylindrical tanks were on their sides and appeared to be empty; they may be old railroad tank car bodies. The other two tanks contained a small amount of sludge. A black, solidified tarry substance was located just north of the tanks. The tarry substance was hard and covered an area approximately 10 feet by 100 feet. An IEPA representative stated that the tarry substance probably came from a tank that either had disintegrated or had been removed. Piping, metal, and what appeared to be insulation were intermixed with the solidified tar.

Several crushed, empty 55-gallon drums were on the ground in the northeastern section of the site. The drums were unlabeled and rusted. During the sampling event, the field team was unable to locate the drums because of overgrown vegetation in the area; therefore, the drums are not shown on the site sketch (Figure 2-2) or the sample location map (Figure 3-1).

The ponds and marsh located onsite support wetland vegetation and wildlife, but are not considered sensitive environments. Pond 1, approximately 200 feet by 200 feet, is located in the central portion of the site. A muskrat hut was built on the pond, and waste piles were located near the edge of the pond. The other pond, approximately 200 feet by 300 feet, is located in the southeastern section of the site. This pond extends to the east and covers another area approximately 100 feet by 200 feet. When the field team returned to the site for the sampling event, part of this pond was filled in, separating it into two ponds. These ponds are shown as pond 2 and pond 3 on Figure 2-2. Large piles of scrap metal and iron chunks were sitting in the pond. By August 1993, these piles had been removed. It was evident that filling had occurred along the perimeter of the pond. The marsh located in the

northeastern section of the site covered approximately two acres. The northern and eastern perimeter ditches also contained standing water, frogs, and wetland vegetation, but are not considered sensitive environments. Site runoff generally flowed to onsite ponds, marsh, perimeter ditches, and the intermittent stream.

The property has been used for landfilling and stockpiling of wastes. It was not evident where the landfilling has taken place, but most of the site has been altered extensively. Heavy vehicular traffic was observed on Sauk Trail Road, and several commercial developments are located southeast of the site. An open field is east of the site; an auto junk yard is west of the site. The nearest residence is southwest of the site, across Sauk Trail Road.

Dirt bike tracks were found in the western portion of the site and on the large black ash waste pile (waste pile G), indicating that the site was used for recreation. The ash waste pile was approximately 20 feet high by 300 feet in diameter. Fresh deer tracks, a rabbit, field mice, ducks, and frogs were observed onsite.

The topography of the western portion of the site is hilly, with debris and waste piles scattered about. Trees and grass covered most of the ground surface, especially near the western property line. Large black ash piles did not support plant growth, except for moss. An excavated area is located in the northwestern site corner. This area contains an abandoned, burnt pickup truck, with shotgun holes and current license plate tags. Clay pigeons and spent shotgun shells on the ground indicate that shotgun practice has occurred onsite. The northeastern site corner appeared to be relatively unaltered; it was covered with small trees and grass. The eastern portion of the site was flat and vegetated, debris and waste piles were scattered about.

The field team located only one of the monitoring wells in the landfill's groundwater monitoring network: monitoring well 4 at the southeastern property corner. The well had no outer protective casing and was made of grey, 2-inch diameter, schedule 80 polyvinyl chloride (PVC) with glued couplings. Monitoring wells 1, 2, and 3 could not be located.

No facilities (potable water source, telephone, toilets, etc.) were onsite.

3.3 Site Representative Interview

After completing the field reconnaissance, the field team waited for Charles LoBue to arrive. By prearrangement, Mr. LoBue was to meet the field team at the site at approximately 5:15 p.m., after his workshift, so that an interview could be

conducted. The field team waited, but Mr. LoBue did not arrive. The site reconnaissance visit was ended at approximately 5:50 p.m.

During a telephone conversation on March 8, 1993, Charles LoBue said he was one of several titleholders for the property. He also stated that because the landfill is not permitted to accept metal wastes, he had been trying to find a facility that would accept those wastes so they could be removed from the site. He said most metal waste at the site was secondary scrap material, high in manganese and non-magnetic, which made it difficult to find a facility that would accept it.

3.4 Monitoring Well Installation

Four bedrock monitoring wells (MW05 through MW08) were installed at the LoBue #2 site during ESI field activities. Figure 3-1 shows the monitoring well locations. Layne Western Drilling Company performed soil boring advancement, rock drilling and coring, and monitoring well installation using a Central Mining Equipment 75 drill rig.

Drilling began on October 19, 1993. An 8-1/4 inch outside diameter (OD) hollow stem auger was used to advance a soil boring at each location. Split spoon soil samples were collected every five feet, starting at ground surface, until bedrock was encountered. A geologist classified and logged the soil. Appendix E contains the boring and well installation logs.

When bedrock was encountered, the augers were used as temporary casing to prevent contaminant migration from potentially contaminated shallow glacial till water-bearing units to the bedrock aquifer. After reaching bedrock, the boring continued with 2-7/8 inch OD double core barrel, using potable water as a drilling fluid. Each boring was advanced to a sufficient depth into the bedrock to assure a representative groundwater sample from the aquifer. The borehole was reamed with a 3-7/8 inch OD tricone bit, using potable water as a drilling fluid. Potable water was obtained from the South Chicago Heights public works building at 3275 Butler Road.

A monitoring well was installed in each boring using a ten foot, two-inch inside diameter (ID) National Sanitation Foundation (NSF) certified schedule 40 PVC screen with 0.010-inch slots. Each monitoring well screen was placed below the top of the bedrock aquifer. Two-inch ID NSF certified schedule 40 PVC riser pipes were installed to approximately three feet above ground surface. The well annulus was filled with a sand filter pack, a high solids bentonite slurry seal, and cement-bentonite grout.

Locking steel protective covers and guard posts were cemented into place. To develop each well, a two-inch OD submersible pump removed a minimum of five volumes of water or pumped the well until it was dry.

Monitoring well MW05 was located along the north-central property line in the northern perimeter ditch. Bedrock was encountered in the MW05 borehole at 41 feet below grade. The well was developed by pumping 300 gallons of water. The screened interval for MW05 was placed from approximately 50 to 60 feet below ground surface.

Monitoring well MW06 was located along the west-central property line, east of the unnamed stream. Bedrock was encountered in the MW06 borehole at 30.3 feet below grade. The well was developed by the ESI field team using a PVC hand pump; it was pumped dry on three different occasions. The screened interval for MW06 was placed from approximately 35 to 45 feet below ground surface.

Monitoring well MW07 is located along the southern property line, northeast of the entrance gate. Bedrock was encountered in the MW07 borehole at 55.6 feet below grade. The well was pumped dry three times during development. The screened interval for MW07 was placed from approximately 66 to 76 feet below ground surface.

Monitoring well MW08 is located in the southeastern section of the site, southeast of pond 2. Bedrock was encountered in the MW08 borehole at 66.5 feet below grade. The well was developed by pumping 28 gallons of water. The screened interval for MW08 was placed from approximately 79 feet to 89 feet below ground surface.

Relative monitoring well elevations were surveyed on January 7, 1994. A notch to mark the elevation point was placed on the top of the riser of each monitoring well. An elevation of 400 feet was assumed to be the top of the riser of MW06. The relative elevation of MW05 is 407 feet; the relative elevation of MW07 is 415.22 feet; and the relative elevation of MW08 is 414.5 feet.

Relative elevations of the four wells were used to determine groundwater flow direction of the bedrock aquifer. The flow direction is east-southeast; therefore, MW06 is the upgradient background well.

Slug test data from the monitoring wells were collected on January 7, 1994, using an In-Situ Hermit SE1000B datalogger. The data were used to calculate the aquifer's hydraulic conductivity. Calculations were performed manually to solve the Hvorslev equation for a falling-head piezometer test. The average hydraulic

conductivity of MW05 is 1.65×10^{-3} centimeters per second. The average hydraulic conductivity of MW06 is 4.4×10^{-5} centimeters per second. The average hydraulic conductivity of MW07 is 1.1×10^{-4} centimeters per second. The average hydraulic conductivity of MW08 is 1.5×10^{-4} centimeters per second.

3.5 Groundwater Sampling

3.5.1 Monitoring Well Samples

On December 6 and 7, 1993, the ESI field team collected groundwater samples from the four onsite monitoring wells. Before sampling, monitoring wells MW05, MW07, and MW08 were purged of three well volumes or until dry. Temperature, conductivity, and pH field measurements were taken periodically as each well was purged, to determine the stability of these parameters. Monitoring well MW06 had not been developed by the drilling subcontractor; therefore, it was developed before sampling using a PVC hand pump. All wells were purged and sampled with decontaminated, stainless steel bailers. Each sample was placed in a clean sample jar. The portion of each sample for total metals analysis was filtered using a portable peristaltic pump and 0.45 micron filter. LoBue #2 representative Charles LoBue did not elect to split samples collected by the field team. Figure 3-1 shows sample locations; Table 3-1 summarizes sample locations and descriptions.

Sampling procedures were conducted in accordance with procedures set forth in the QAPjP. Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories. Monitoring well samples scheduled for organic analysis were shipped to Davis & Floyd, Inc., in Greenwood, South Carolina, on December 7, 1993. Monitoring well samples scheduled for inorganic analysis were shipped to IT Analytical Services in Export, Pennsylvania, on the same day. Samples were analyzed for TCL and TAL substances under a routine analytical services request.

Reusable sampling and personal protective equipment (PPE) were decontaminated before transport offsite. Disposable sampling and PPE items were discarded in accordance with procedures outlined in the ESI project implementation plan and QAPjP.

Samples GW05, GW06, GW07, and GW08 were collected from monitoring wells MW05, MW06, MW07, and MW08, respectively. One duplicate sample also was collected from MW06.

Monitoring well samples were collected to determine groundwater conditions across the site because a nearby target population is potentially at risk. South Chicago Heights and most other communities within four miles, with the exception of Chicago Heights, use groundwater for drinking purposes. The South Chicago Heights municipality and most private wells within 4 miles of the site draw water from the Silurian dolomite bedrock aquifer, which is the same aquifer where the onsite monitoring wells are screened.

3.5.2 Residential Well Samples

On December 8, 1993, the ESI field team sampled water from one residential well. Water was allowed to discharge from the well for 15 minutes before sampling to ensure the well had been purged of standing water. The residential well sample was obtained from a water valve outlet that bypassed the water treatment system. The sample was collected directly from the water valve outlet into clean sample containers. A duplicate sample also was collected. Figure 3-1 shows the sample location; Table 3-1 summarizes the sample location and description.

Sampling procedures were conducted in accordance with procedures set forth in the QAPjP. Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories. Residential well water samples scheduled for organic analysis were shipped to Recra Environmental, Inc., in Tonawanda, New York, on December 8, 1993. Residential well water samples scheduled for inorganic analysis were shipped to Chemtech Consulting Group in Englewood, New Jersey, on the same day. Samples were analyzed for TCL and TAL substances under a special analytical services request.

Sample RW01 was collected from a private well located approximately 500 feet southwest of the site, on the southern side of Sauk Trail Road. The well is approximately 125 feet deep, with a pump set at approximately 80 feet. The well is in the basement of the residence and has a pressure tank and associated piping attached to it. A water filter and softener is also attached. This well was sampled to determine groundwater conditions at the nearby potential target.

Illinois State Water Survey (ISWS) well records indicate that a residential well is located approximately 0.4 mile south of the site, along 130th Street, in South Chicago Heights (ISWS undated). Sample RW02 was planned to be collected from that well. However, the field team was unable to locate the well, so this sample was not collected.

3.6 Surface Water Sampling

3.6.1 Sediment Samples

On August 23, 1994, the ESI field team collected eight sediment samples. Each sample was excavated with a clean, stainless steel spoon and placed in a clean sample jar. One duplicate sample also was collected. LoBue #2 representative Charles LoBue did not elect to split samples collected by the field team. Figure 3-1 shows sample locations; Table 3-1 summarizes sample locations and descriptions.

Sampling procedures were conducted in accordance with procedures set forth in the QAPjP. Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories. Sediment samples scheduled for organic analysis were shipped to Ecology and Environment, Inc., in Buffalo, New York, on August 23, 1993. Sediment samples scheduled for inorganic analysis were shipped to Compuchem Laboratories in Research Triangle Park, North Carolina, on the same day. Samples were analyzed for TCL and TAL substances under a routine analytical services request.

Reusable sampling and PPE were decontaminated before transport offsite. Disposable sampling and PPE items were discarded in accordance with procedures outlined in the ESI project implementation plan and QAPjP.

ESI sediment samples were collected to determine whether the landfill and waste piles are releasing significant amounts of hazardous substances to onsite and nearby surface water bodies. A background sample, ST01, was collected from the unnamed stream that intersects the southwestern site corner. The sample was collected upstream (southwest) of the site, south of the bridge at Sauk Trail Road. This location was selected as representative of natural sediment conditions in the area. Sample ST02 also was collected from the unnamed stream, at the point where the stream exits the site and a small ravine from the site empties into the stream. The sample was collected just east of a culvert under railroad embankment, along the western property line. Samples ST03 and ST04 were collected from onsite ponds 1 and 2, respectively. Samples ST05 and ST06 were collected from the marsh in the northeastern site section. Samples ST07 and ST08 were collected from the northern and eastern perimeter drainage ditches, respectively. Samples were collected within the top 6 inches of sediment, near the surface water/sediment interface.

3.7 Soil Sampling

On August 24, 1993, the ESI field team collected eight soil samples. Each sample was excavated with a clean, stainless steel spoon and placed in a clean sample jar. One duplicate sample also was collected. LoBue #2 representative Charles LoBue did not elect to split samples collected by the field team. Figure 3-1 shows sample locations; Table 3-1 summarizes sample locations and descriptions.

Sampling procedures were conducted in accordance with procedures set forth in the QAPjP. Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories. Soil samples scheduled for organic analysis were shipped to American Analytical and Technical Services, Inc., in Baton Rouge, Louisiana, on August 24, 1993. Soil samples scheduled for inorganic analysis were shipped to IT Analytical Services in Export, Pennsylvania, on the same day. Samples were analyzed for TCL and TAL substances under a routine analytical services request.

Reusable sampling and PPE were decontaminated before transport offsite. Disposable sampling and PPE items were discarded in accordance with procedures outlined in the ESI project implementation plan and QAPjP.

ESI soil samples were collected to determine whether hazardous substances are migrating from onsite waste piles and to delineate site surficial soil contamination. Each sample was collected within the top two feet of soil.

A background soil sample, SS01, was collected from the northern perimeter berm that runs along the northern property line. This location was selected as representative of natural soil conditions in the area. Other soil samples were collected from locations adjacent to onsite waste piles. Sample SS02 was collected approximately 6 feet northwest (downgradient) of waste pile H in the northwestern section of the site. Samples SS03 and SS04 were collected adjacent to waste piles F and E, respectively, in the southwestern section of the site. Sample SS05 was collected adjacent to waste pile S, west of pond 1. Sample SS06 was collected north of scattered waste pile K in the north-central portion of the site. Sample SS07 was to be collected adjacent to three crushed drums encountered during the reconnaissance visit, north of the marsh; however, the sample was not collected because the drums could not be located in the heavy, tall vegetation. Sample SS08 was collected adjacent to waste pile R in the eastern portion of the site. Sample SS09 was to be collected adjacent to a scrap metal waste pile partially in pond 2. However, the waste pile had been removed, and part of pond 2 had been filled in by

a contractor who was onsite during the sampling visit to reclaim some scrap metal. Sample SS09 was still collected near the waste pile, east of pond 2, in the southeastern site section.

3.8 Waste Sampling

On August 24 and September 2, 1993, the ESI field team collected five waste samples from waste piles onsite. One duplicate sample also was collected. LoBue #2 representative Charles LoBue did not elect to split samples collected by the field team. Figure 3-1 shows sample locations; Table 3-1 summarizes sample locations and descriptions.

Sampling procedures were conducted in accordance with procedures set forth in the QAPjP. Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories. Waste samples scheduled for organic analysis were shipped to American Analytical and Technical Services, Inc., in Broken Arrow, Oklahoma, on August 25, 1993. Waste samples scheduled for inorganic analysis were shipped to Ecotek Laboratory Services, Inc., in Atlanta, Georgia, on September 2, 1993. Samples were analyzed for TCL and TAL substances under a special analytical services request.

Reusable sampling and PPE were decontaminated before transport offsite. Disposable sampling and PPE items were discarded in accordance with procedures outlined in the ESI project implementation plan and QAPjP.

ESI waste samples were collected to characterize waste piles observed onsite. The portion of each sample for volatile organic compounds analysis was a grab sample collected from one location within the waste pile; this portion of the sample was excavated with a clean, stainless steel spoon and placed in a clean sample jar. The remaining portion of each waste sample was a composite sample collected from several locations within each waste pile; the sample was collected with a clean, stainless steel spoon, placed in a clean, stainless steel bowl, thoroughly mixed, and placed in clean sample jars.

Waste sample WS01 was collected from the solidified tar-like material (waste pile H) in the northwestern section of the site. The sample had to be broken into small pieces with a hammer before being containerized. Sample WS02 was collected from the large black ash waste pile (waste pile G) in the northwestern section of the site. Sample WS03 was collected from the soil, slag, rebar, concrete and brick fragments, and debris waste pile (waste pile D) in the southwestern section of the

site. The scrap metal salvaging contractor working onsite before and during the ESI sampling visit graded the waste pile, but soil, slag, iron pieces, and concrete and brick fragments were still evident. Note that the contractor's work onsite is temporary and intermittent. Sample WS04 was collected from the sand waste pile (waste pile I) in the northwestern section of the site. The sand is potentially a foundry waste. The last sample, WS05, was collected from the grey slag, crushed scrap metal, and concrete debris waste pile (waste pile Q) in the eastern section of the site.

3.9 Analytical Results

This section summarizes analytical results from ESI samples. Appendix C presents ESI analytical data.

Analysis of samples collected from the four onsite monitoring wells indicate no significant amounts of target organic compounds were present in the groundwater. Inorganic analyte concentrations in the groundwater samples are generally of the same magnitude as the background sample (GW06). Notable exceptions are iron and nickel in sample GW05 at concentrations of 3,540 ug/L and 16.0 ug/L, respectively; and manganese in sample GW07 at a concentration of 455 ug/L.

No target organic compounds were detected in the groundwater sample collected from the residential well southwest of the site. Inorganic analytes detected include beryllium at 1.5 ug/L, copper at 89.4 ug/L, silver at 12.5 ug/L, and zinc at 177 ug/L.

Sediment samples collected from the unnamed stream and onsite ponds, marsh, and drainage ditches contained organic compounds at low concentrations. The maximum concentration of acetone was detected in ST05 at a concentration of 0.096 mg/kg. No pesticides were detected in the samples. Several inorganic analytes were detected in sediment samples. Sample ST02 contained maximum concentrations for arsenic (23.1 mg/kg) and cadmium (6.8 mg/kg). Sample ST04 contained maximum concentrations for cobalt (60.0 mg/kg), magnesium (98,800 mg/kg), manganese (4,260 mg/kg), and nickel (732 mg/kg). Sample ST05 contained the maximum value for mercury (0.73 mg/kg). Sample ST06 contained maximum concentrations for chromium (182 mg/kg) and copper (92.6 mg/kg). Sample ST07 contained the maximum concentration for lead (291 mg/kg).

Laboratory analysis of soil samples collected near onsite waste piles revealed the presence of several organic compounds and inorganic analytes. Acetone was detected in several soil samples at concentrations as high as 31 ug/kg. Polynuclear

aromatic hydrocarbons (PAHs) in sample SS05 included fluoranthene (1,200 ug/kg), benzo(a)anthracene (590 ug/kg), chrysene (820 ug/kg), and benzo(b)fluoranthene (720 ug/kg). No polychlorinated biphenyls (PCBs) were detected in the soil samples. Dieldrin (a pesticide) was detected in several samples: the highest concentration is 71 ug/kg in sample SS02. For the inorganic analytes, sample SS02 had the highest concentrations for cadmium (23.1 mg/kg), selenium (1.3 mg/kg), silver (0.59 mg/kg), and thallium (0.47 mg/kg). Sample SS03 had the highest concentration for beryllium (1.2 mg/kg). Sample SS09 had the highest concentration for sodium (173 mg/kg). ESI analytical results for soil samples are generally consistent with 1986 SSI results.

Waste pile samples were analyzed under a high concentration special analytical services request; therefore, the reported sample quantitation limits (SQLs) for the organic portion of the samples are higher than normal. Semivolatile organic compounds were only detected at concentrations above the SQLs in sample WS01. This sample contained several PAHs, including phenanthrene (2,000 mg/kg), pyrene (2,700 mg/kg), benzo(a)anthracene (1,400 mg/kg), chrysene (2,300 mg/kg), benzo(b)fluoranthene (480 mg/kg), benzo(a)pyrene (2,000 mg/kg), and benzo(g,h,i)perylene (560 mg/kg). No pesticides or PCBs were detected in the waste pile samples. Several inorganic analytes were detected in the waste pile samples. Sample WS02 had the only detected concentrations for beryllium (3.6 mg/kg), selenium (11.0 mg/kg), and thallium (0.8 mg/kg). Sample WS05 had the highest reported concentrations for antimony (13.8 mg/kg), silver (4 mg/kg), and vanadium (113 mg/kg).

3.10 Key Samples

"Key samples" are those samples that contain substances in sufficient concentration above background to document an observed release. Table 3-2 identifies ESI key samples.

The results for key sample RW01, however, cannot be attributed to the LoBue #2 site. This sample was collected from a residential well southwest of the site. The groundwater flow direction of the bedrock aquifer was determined to be eastward based on the relative elevations of the four onsite monitoring wells. Therefore, RW01 is not downgradient of the site, and substances detected in the sample cannot be attributed to the site. Sample RW01 was eliminated from consideration as documentation of an observed release from the site.

Table 3-2
Key Sample Summary
Groundwater and Residential Well Samples

Substance		Sample Location and Number Concentrations in ug/L			
		GW06 Background	GW05	GW07	RW01
Inorganics	Beryllium	0.40 U			1.5 B
	Copper	1.5 U			89.4 JN
	Iron	85.0 JB	3540 J		
	Manganese	61.6		455	
	Nickel	7.4 U	16.0 B		
	Silver	2.1 U			12.5
	Zinc	4.2 UJB			177

Notes: U Substance is undetected. The reported value is the contract required detection limit.

J Reported value is estimated.

B Reported value is less than the contract required detection limit, but greater than or equal to the instrument detection limit.

N Spiked sample recovery was not within control limits.

Key sample RW01 was eliminated from consideration as documentation of an observed release because it was not attributable to the LoBue #2 site.

Table 3-2 (Continued)
Key Sample Summary
Sediment Samples

Substance		Sample Location and Number Concentrations in mg/kg							
		ST01 Background	ST02	ST03	ST04	ST05	ST06	ST07	ST08
Organics	Acetone	0.018 UB				0.096 B		0.040	
Inorganics	Arsenic	2.1 B	23.1	6.7		7.2 B	7.1		
	Cadmium	1.1 B	6.8				5.6		
	Chromium	23.9			145		182		
	Cobalt	9.9 B			60.0				
	Copper	17.5				67.1	92.6		
	Lead	18.1	124		71.5	85.3 S	174	291	85.7
	Magnesium	4070	21300	29600	98800	27600	43300	18600	59500
	Manganese	193	669	1060	4260	666	2380	683	
	Mercury	0.16 U				0.73		0.29	
	Nickel	18.3			732	144	183	96.0	

- Notes: U Substance is undetected. The reported value is the contract required quantitation limit for organics or contract required detection limit for inorganics.
- B For organics: Compound was found in the associated blank as well as in the sample.
For inorganics: Reported value is less than the contract required detection limit, but greater than or equal to the instrument detection limit.
- S The reported value was determined by the Method of Standard Additions.

Table 3-2 (Continued)
Key Sample Summary
Soil Samples

Substance		Sample Location and Number						
		SS01 Background	SS02	SS03	SS04	SS05	SS06	SS09
Organics (ug/kg)	Acetone	11 U			25	31	13	18
	Fluoranthene	190 J				1200		
	Benzo(a)Anthracene	97 J				590		
	Chrysene	130 J				820		
	Benzo(b)Fluoranthene	93 J				720		
	Dieldrin	3.5 UJ	71 JD			9.4 P		7.5
Inorganics (mg/kg)	Beryllium	0.19 JB	0.98 B	1.2 B				
	Cadmium	1.4	23.1					
	Selenium	0.13 U	1.3	0.64 B				
	Silver	0.50 U	0.59 B					
	Sodium	149 UB						173 B
	Thallium	0.19 U	0.47 B	0.46 B				

- Notes:
- U Substance is undetected. The reported value is the contract required quantitation limit for organics or contract required detection limit for inorganics.
 - J Reported value is estimated.
 - D Substance was identified in an analysis at a secondary dilution factor.
 - P A difference greater than 25% for detected concentrations between the two GC columns exists. The lower of the two values is reported and flagged with a "P."
 - B For inorganics: Reported value is less than the contract required detection limit, but greater than or equal to the instrument detection limit.

Table 3-2 (Continued)
Key Sample Summary
Waste Samples

Substance		Sample Location and Number			
		Concentrations in mg/kg			
		SS01 Background	WS01	WS02	WS05
Organics	Phenanthrene	0.11 J	2000		
	Pyrene	0.16 J	2700		
	Benzo(a)Anthracene	0.097 J	1400		
	Chrysene	0.13 J	2300		
	Benzo(b)Fluoranthene	0.093 J	480 J		
	Benzo(a)pyrene	0.35 U	2000 J		
	Benzo(g,h,i)perylene	0.35 U	560		
Inorganics	Antimony	3.6 UJN			13.8 JN
	Beryllium	0.19 JB		3.6	
	Selenium	0.13 U		11.0 JN	
	Silver	0.50 U			4.0
	Thallium	0.19 U		0.8 JBNW	
	Vanadium	15.3			113

- Notes:
- U Substance is undetected. The reported value is the contract required quantitation limit for organics or the contract required detection limit for inorganics.
 - J Reported value is estimated.
 - B For inorganics: Reported value is less than the contract required detection limit, but greater than or equal to the instrument detection limit.
 - N Spiked sample recovery was not within control limits.
 - W Post-digestion spike for the analysis was not within control limits, while sample absorbance was less than 50 percent of spike absorbance.

The unique characteristics of waste piles make it difficult to define background concentrations. Waste pile sample results were compared to the soil background sample to determine key waste pile samples. This is considered a reasonable approach because the waste piles are at ground surface, uncovered, and, with the exception of WS01, have properties similar to soil.

4.0 Characterization of Sources

4.1 Introduction

ESI results indicate four sources exist at the LoBue #2 site: the landfill, contaminated soil, foundry waste piles, and a tar-like waste pile.

4.2 Waste Source: Landfill

4.2.1 Description

The IEPA classifies the LoBue #2 site as a temporarily closed solid waste landfill that covers approximately 25 acres in South Chicago Heights, Illinois. Filling operations at the site began in 1952. IEPA site inspections began in 1970; IEPA classified the site as an illegal open dump. Wastes were dumped into open pits and buried. In 1975, IEPA issued a solid waste management facility operating permit for the site. The landfill does not have an engineered liner or leachate collection system (Walter H. Flood & Co., Inc. 1973). Perimeter drainage ditches and berms are located along the northern and eastern property lines. A perimeter ditch is also located along part of the southern property line. The owner/operator filed for bankruptcy in 1985 (IEPA 1989). A final cover has not been constructed over the landfilled areas. Most of the site has been extensively altered, but it is not evident where landfilling took place.

4.2.2 Waste Characteristics

Before 1975, the site was used as an open dump/landfill for disposal of wastes, including household refuse, demolition debris, appliances, and oily wastes (IEPA 1984). The landfill's operating permit, issued in 1975, allowed landfilling of specific wastes: foundry sand, slag, cinders, soil, concrete, brick, asphalt, cardboard, and demolition material (IEPA 1975a, IEPA 1975b). Many violations have occurred throughout the history of the site; cited violations include the ponding of water onsite; acceptance of unpermitted wastes, such as paints and solvents; inadequate cover; and leachate problems (IEPA 1979, IEPA 1981, IEPA 1982, IEPA 1989). IEPA site inspections conducted between 1979 and 1980 documented many drums onsite, most of which were empty and some of which had their contents (paint wastes) spilled onto the ground and into ponded water onsite. Some drums had plastic liners; others were 100-pound size chemical drums (IEPA 1984). These drums were reportedly landfilled along with other wastes. USEPA Form 2070-13 was completed as part of

the SSI for the site. The form is dated November 1, 1984, and indicates that approximately 322,667 cubic yards of waste were placed in the landfill and that 10 acres of the site were filled (Ecology and Environment, Inc. 1986). No documentation is available on the chemical composition of the wastes deposited onsite.

4.3 Waste Source: Contaminated Soil

4.3.1 Description

Analyses of ESI soil samples indicate approximately 7.5 acres (325,000 square feet) of soil contain, to some extent, an observed release. Key samples SS02, SS03, SS04, SS05, SS06, and SS09, which document the observed release (Table 3-2), define this area. Sample SS02 was collected approximately 6 feet northwest (downgradient) of waste pile H in the northwestern section of the site. Samples SS03 and SS04 were collected adjacent to waste piles F and E, respectively, in the southwestern section of the site. Sample SS05 was collected adjacent to waste pile S, west of pond 1. Sample SS06 was collected north of scattered waste pile K in the north-central portion of the site. Sample SS09 was collected near a former scrap metal waste pile location, east of pond 2, in the southeastern section of the site.

4.3.2 Waste Characteristics

ESI analytical results indicate the area of affected soil contains releases of one volatile organic compound, four semivolatile organic compounds, one pesticide, and six inorganic analytes. Table 3-2 indicates substances detected in key soil samples and their associated concentrations. Acetone, a volatile organic compound, was detected at levels significantly above background in four soil samples; reported concentrations range from 13 to 31 parts per billion (ppb). Four semivolatile organic compounds, detected at levels significantly above background, were found only in sample SS05; reported concentrations range from 590 ppb for benzo(a)anthracene to 1,200 ppb for fluoranthene. The pesticide dieldrin was detected at levels significantly above background in three soil samples; reported concentrations range from 7.5 to 71 ppb. Six inorganic analytes, detected at levels significantly above background, include beryllium, cadmium, selenium, silver, sodium, and thallium. These inorganic analytes were found in samples SS02, SS03, and/or SS09 at concentrations ranging from 0.46 parts per million (ppm) for thallium to 173 ppm for sodium.

Surface soil could have potentially been affected by hazardous substances migrating from onsite waste piles or the landfill.

4.4 Waste Source: Foundry Waste Piles

4.4.1 Description

Stockpiles, which have been used to store waste materials at the LoBue #2 site, are scattered throughout the site. These piles contain foundry wastes (sand, slag, ash), scrap metal, brick, concrete, wood, soil, and demolition debris. Waste piles are at ground surface, are uncovered, and vary in size.

Four ESI waste samples (WS02 through WS05) were collected for waste piles believed to contain foundry wastes. Sample WS02 was collected from the large black ash waste pile (waste pile G) in the northwestern section of the site. The black ash waste pile is approximately 20 feet high and 300 feet in diameter. Sample WS03 was collected from the soil, slag, rebar, concrete and brick fragments, and debris waste pile (waste pile D) in the southwestern section of the site. The waste pile had been graded by the scrap metal salvaging contractor working onsite before and during the ESI sampling visit, but soil, slag, iron pieces, and concrete and brick fragments were still evident in the graded pile. Sample WS04 was collected from the foundry sand waste pile (waste pile I) in the northwestern section of the site. Waste pile I is approximately 6 feet high and 25 feet in diameter. The last sample, WS05, was collected from the grey slag, crushed scrap metal, and concrete debris waste pile (waste pile Q) in the eastern section of the site. Waste pile Q is approximately 15 feet high and 30 feet in diameter.

4.4.2 Waste Characteristics

ESI analytical results indicate that waste pile G and waste pile Q, believed to be foundry wastes, contain several inorganic analytes at concentrations significantly above background. Sample WS02 contained beryllium (3.6 ppm), selenium (11.0 ppm), and thallium (0.8 ppm) at levels significantly above background. Sample WS05 contained antimony (13.8 ppm), silver (4.0 ppm), and vanadium (113 ppm) at levels significantly above background.

4.5 Waste Source: Tar-like Waste Pile

4.5.1 Description

A solidified, black tar-like waste was found at ground surface in the northwestern section of the site. IEPA records indicated the tar-like substance overflowed from an old railroad tank body in 1979 (IEPA 1984). Piping, metal, and what appeared to be insulation were intermixed with the solidified tar. The waste pile is uncovered.

Waste sample WS01 was collected from the solidified tar-like material (waste pile H), which covers an area approximately 10 feet by 100 feet.

4.5.2 Waste Characteristics

ESI analytical results indicate sample WS01 contained seven semivolatile organic compounds at concentrations significantly above background. All seven semivolatile organic compounds are polynuclear aromatic hydrocarbons; concentrations ranged from 480 ppm for benzo(b)fluoranthene to 2,700 ppm for pyrene.

5.0 Discussion of Migration Pathways

5.1 Introduction

This section includes information useful in analyzing the potential impact of hazardous substances found at the LoBue #2 site on the four migration pathways: groundwater, surface water, air, and soil.

5.2 Groundwater

Onsite boring logs for monitoring wells installed during the ESI and by the site owner/operator in 1972 indicate fill material varies from 0 to 22 feet around the site perimeter. Beneath the fill is 10 to 52 feet of Quaternary glacial till composed of clay and silt with interspersed water-bearing sand and gravel lenses. Most permeable lenses in the glacial till are thin and do not appear to be connected; however, a 23-foot-thick sand lens was encountered in the boring for MW08. Underlying the glacial till is the Silurian Niagaran dolomite formation, the primary drinking water aquifer for the surrounding area (IEPA 1992). The Silurian formation begins at depths of 30 to 67 feet below ground surface beneath the site. This formation is the predominant bedrock lithology in the area (Illinois State Geological Survey [ISGS] 1952 and 1954). The boring logs describe the dolomite as being grey to green, fine grained to crystalline, with 1/2 to 3 inch grey chert nodules, occasional pyrite and fossils, some naturally occurring tar in vugs, and slightly to highly weathered. Vugs are small cavities usually lined with crystals of a mineral composition different from that of the surrounding rock. According to H.B. Willman, most dolomite beds in the Chicago area are conspicuously vuggy and, in a few localities, the vugs are partly filled with asphaltum, a solid petroleum residue (ISGS 1971). Appendix E contains boring and well installation logs for the monitoring wells installed during the ESI.

Hydraulic interconnection between glacial till deposits and the Silurian bedrock is limited because silt and clay in the glacial till likely impede downward migration. However, some permeable lenses are in contact with the Silurian bedrock. Site records indicate that groundwater flow is minimal in the glacial drift. IEPA inspections and the 1984 FIT contractor site inspection revealed little or no water in the landfill monitoring wells screened in the glacial drift (Ecology and Environment, Inc. 1986). Only one landfill monitoring well was located during the ESI reconnaissance visit in 1993.

Groundwater flow in the Silurian bedrock aquifer was determined to be east-southeast using the relative elevations of the four monitoring wells installed onsite during the ESI. The wells are screened within the top 25 feet of the Silurian bedrock. The gradient is unusually steep and may be caused by nearby industrial or municipal groundwater use east or southeast of the site. The hydraulic conductivity of the Silurian aquifer was determined to range from 10^{-3} to 10^{-5} centimeters per second. Analysis of ESI groundwater samples collected from the bedrock monitoring wells indicate the presence of several inorganic analytes at levels meeting observed release criteria in wells MW05 and MW07. One nearby residential well was also sampled during the ESI. The well is located southwest (not downgradient) of the site and draws water from the Silurian aquifer; therefore, analytical results for residential well sample RW01 cannot be attributed to the site.

The observed release to the groundwater pathway poses a threat to local drinking water supplies. Most communities within four miles of the site, including South Chicago Heights, Steger, Crete, Sauk Village, Ford Heights, and Park Forest, use groundwater as their drinking water source. Each community has its own municipal well system that draws water from the Silurian bedrock aquifer (IEPA 1992), except Chicago Heights, which is served by City of Chicago water drawn from Lake Michigan. The two closest municipal wells are approximately one-quarter mile southwest and southeast of the site, and are 493 feet and 484 feet deep, respectively. A large number of private wells also are located within the target distance limit; most are screened in the Silurian bedrock aquifer (ISWS undated). The closest private well is approximately 500 feet southwest of the site and approximately 125 feet deep. Table 5-1 summarizes the groundwater target population within four miles of the site.

5.3 Surface Water

Surface water runoff from the site flows into onsite ponds, marsh, or perimeter drainage ditches along the northern, eastern, and southern site borders. Some surface water runoff from the western half of the site flows into the unnamed stream that runs along a portion of the western site border. The northern and eastern perimeter drainage ditches retain some runoff; excess surface water drains into the unnamed stream. The probable point of entry to the unnamed stream is along the western border, near a culvert under an embankment from an old railroad line, where a small ravine from the site empties into the stream. The unnamed stream flows northward and is intermittent. According to United States Geological Survey

Table 5-1 Population Using Groundwater Within Four Miles of the Site	
Radial Distance from Site (in miles)	Approximate Population Supplied by Private Wells
0 to 1/4	0
1/4 to 1/2	2,468
1/2 to 1	4,433
1 to 2	7,852
2 to 3	30,813
3 to 4	15,151
Total Population	60,717

References: IEPA 1992, ISWS undated.

topographical maps, the unnamed stream enters the 26th Street sewer line about three quarters of a mile downstream of the probable point of entry in Chicago Heights. Appendix A contains a map depicting the surface water route.

ESI sediment samples were collected from the unnamed stream and onsite drainage ditches, ponds and marsh. Chemical analysis of the sediment samples revealed the presence of one volatile organic compound and ten inorganic analytes at levels meeting observed release criteria.

No surface water intakes or sensitive environments are located along the surface water migration path. The two onsite ponds, marsh, and perimeter drainage ditches support wetland flora and fauna, but do not meet the criteria for sensitive environments.

5.4 Air

No documented air releases are known, and none was observed during the ESI. No air sampling was performed during the ESI. Air monitoring activities during ESI sampling activities were conducted using a photo-ionization detector; no readings above background were observed.

The potential for the release of hazardous substances from the site into the air exists because ESI analytical results document the presence of hazardous substances in the top two feet of soil. The landfill does not have an engineered cover and is not surrounded by an engineering windbreak; therefore, particulate and gas migration containment are assumed to be insufficient. Potential targets include nearby workers and residents. The nearest potential targets are nearby workers at several commercial establishments just southeast of the site, south of Sauk Trail Road. The nearest residence is about 500 feet southwest of the site, also south of Sauk Trail Road. Approximately 13 people live within one-quarter mile of the site.

5.5 Soil

Site soil could have been affected by hazardous substances migrating from the onsite waste piles or the landfill. ESI analytical results indicate that an area of affected soil exists onsite and contains releases of one volatile organic compound, four semivolatile organic compounds, one pesticide, and six inorganic analytes. Key sample locations SS02, SS03, SS04, SS05, SS06, and SS09, which document the observed release, define this area. Samples were collected near waste piles within the top two feet of soil. The affected area covers approximately 7.5 acres of the site.

The landfill is temporarily closed; no permanent workers are onsite. However, on two separate occasions during the ESI, contractors were onsite reclaiming scrap metal. The potential exists for these temporary workers to come into direct contact with affected soil. Dirt bike tracks, clay pigeons, and spent shot gun shells also were noted onsite during the ESI reconnaissance visit, indicating that the site is used for some recreational activities. A gate and a small amount of fencing are located at the site entrance, along Sauk Trail Road to restrict vehicular traffic; however, the rest of the site perimeter is unfenced. Perimeter ditches and large berms along the northern and eastern property lines, as well as the old railroad embankment and stream along the western property line, make access difficult from those directions. Site access can be readily attained from the south.

Nearby targets include workers at two commercial establishments located approximately 200 feet southeast of the site, on the south side of Sauk Trail Road. No schools or day care facilities are located within 200 feet of the site. Residential properties within one-quarter mile of the site are sparse; the nearest residence is approximately 500 feet southwest of the site. Relatively dense urban areas are north, west, and south of the site, starting approximately one-half mile from the site. Approximately 3,531 people live within a one mile radius of the site.

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Appendix A

LoBue #2

Site 4-Mile Radius and 15-Mile Surface Water Route Map

SDMS US EPA Region V

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APPENDIX A – 4-MILE RADIUS MAP & 15-MILE SURFACE WATER ROUTE MAP



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Appendix B

LoBue #2

Target Compound List and Target Analyte List

Target Compound List

Volatiles

Chloromethane	1,2-Dichloropropane
Bromomethane	Cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropane
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	Toluene
2-Butanone	1,1,2,2-Tetrachloroethane
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethyl benzene
Bromodichloromethane	Styrene
	Xylenes (total)

Source: Target Compound List for water and soil with low or medium levels of volatile and semivolatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, ARCS Contractor, September 27, 1991.

Target Compound List (Continued)

Semivolatiles

Phenol	Acenaphthene
bis(2-Chloroethyl) ether	2,4-Dinitrophenol
2-Chlorophenol	4-Nitrophenol
1,3-Dichlorobenzene	Dibenzofuran
1,4-Dichlorobenzene	2,4-Dinitrotoluene
1,2-Dichlorobenzene	Diethylphthalate
2-Methylphenol	4-Chlorophenyl-phenyl ether
2,2-oxybis-(1-Chloropropane)*	Fluorene
4-Methylphenol	4-Nitroaniline
N-Nitroso-di-n-dipropylamine	4,6-Dinitro-2-methylphenol
Hexachloroethane	N-Nitrosodiphenylamine
Nitrobenzene	4-Bromophenyl-phenyl ether
Isophorone	Hexachlorobenzene
2-Nitrophenol	Pentachlorophenol
2,4-Dimethylphenol	Phenanthrene
bis(2-Chloroethoxy) methane	Anthracene
2,4-Dichlorophenol	Carbazole
1,2,4-Trichlorobenzene	Di-n-butylphthalate
Naphthalene	Fluoranthene
4-Chloroaniline	Pyrene
Hexachlorobutadiene	Butyl benzyl phthalate
4-Chloro-3-methylphenol	3,3-Dichlorobenzidine
2-Methylnaphthalene	Benzo(a)anthracene
Hexachlorocyclopentadiene	Chrysene
2,4,6-Trichlorophenol	bis(2-Ethylhexyl)phthalate
2,4,5-Trichlorophenol	Di-n-Octylphthalate
2-Chloronaphthalene	Benzo(b)fluoranthene
2-Nitroaniline	Benzo(k)fluoranthene
Dimethylphthalate	Benzo(a)pyrene
Acenaphthylene	Indeno(1,2,3-cd)pyrene
2,6-Dinitrotoluene	Dibenzo(a,h)anthracene
3-Nitroaniline	Benzo(g,h,i)perylene

*Previously known by the name of bis(2-chloroisopropyl) ether.

Source: Target Compound List for water and soil with low or medium levels of volatile and semivolatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, ARCS Contractor, September 27, 1991.

Target Compound List (Continued)

Pesticide/PCB

alpha-BHC	4,4-DDT
beta-BHC	Methoxychlor
delta-BHC	Endrin ketone
gamma-BHC (Lindane)	Endrin aldehyde
Heptachlor	alpha-chlordane
Aldrin	gamma-chlordane
Heptachlor epoxide	Toxaphene
Endosulfan I	Aroclor-1016
Dieldrin	Aroclor-1221
4,4-DDE	Aroclor-1232
Endrin	Aroclor-1242
Endosulfan II	Aroclor-1248
4,4-DDD	Aroclor-1254
Endosulfan sulfate	Aroclor-1260

Source: Target Compound List for water and soil containing less than high concentrations of pesticides/aroclor, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, ARCS Contractor, September 27, 1991.

Target Analyte List

Aluminum	Magnesium
Antimony	Manganese
Arsenic	Mercury
Barium	Nickel
Beryllium	Potassium
Cadmium	Selenium
Calcium	Silver
Chromium	Sodium
Cobalt	Thallium
Copper	Vanadium
Iron	Zinc
Lead	Cyanide

Source: Target Analyte List in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, ARCS Contractor, September 27, 1991.

Appendix C

LoBue #2

Analytical Results

Appendix C

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Data Reporting Qualifiers

Definitions for Organic Chemical Data Qualifiers

- R - Indicates that the data are unusable. The compound may or may not be present.
- U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
- J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
- N - Indicates presumptive evidence of a compound. This flag is only used for TICs where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, the N code is not used.
- P - This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported and flagged with a "P".
- C - This flag applies to results where identification has been confirmed by GC/MS.
- B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag must be used for a TIC as well as for a positively identified TCL compound.
- E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for the specific analysis. This flag will not apply to pesticide/PCBs analyzed by GC/MS methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and re-analyzed according to the specifications.
- D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- A - This flag indicates that a TIC is a suspected aldol-condensation product.
- X - Other specific flags may be required to properly define the results. The "X" flags are fully described on the data tables.

Data Reporting Qualifiers

Definitions for Inorganic Chemical Data Qualifiers

- R - Indicates that the data are unusable. The compound may or may not be present.
- U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
- J - Indicates an estimated value.
- B - Indicates that the reported value is less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
- E - The reported value is estimated because of the presence of interference.
- M - Duplicate injection precision criteria not met.
- N - Spiked sample recovery not within control limits.
- S - The reported value was determined by the Method of Standard Additions (MSA).
- W - Post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- * - Duplicate analysis was not within control limits.
- + - Correlation coefficient for the MSA was less than 0.995.

Volatile Organic Analysis for Groundwater Samples					
LoBue #2					
Volatile Compound	Sample Location and Number				
	Concentrations in ug/L				
	GW05 EWT63	GW06 Bckgnd. EWT64	GW06 Dup. EWT65	GW07 EWT66	GW08 EWT67
Chloromethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Bromomethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Vinyl Chloride	10 UJ	10 UJ	2 J	10 UJ	10 UJ
Chloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Methylene Chloride	10 UJ	10 UJ	2 J	3 J	10 UJB
Acetone	10 UJ	2 J	10 UJ	10 J	10 UJ
Carbon Disulfide	1 J	10 UJ	10 UJ	10 UJ	10 UJ
1,1-Dichloroethene	10 UJ	10 UJ	2 J	10 UJ	10 UJ
1,1-Dichloroethane	10 UJ	10 UJ	2 J	10 UJ	10 UJ
1,2-Dichloroethene (total)	10 UJ	10 UJ	3 J	10 UJ	10 UJ
Chloroform	10 UJ	10 UJ	2 J	10 UJ	10 UJ
1,2-Dichloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-Butanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1,1-Trichloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Carbon Tetrachloride	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Bromodichloromethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,2-Dichloropropane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
cis-1,3-Dichloropropene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Trichloroethene	10 UJ	10 UJ	3 J	10 UJ	10 UJ
Dibromochloromethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1,2-Trichloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzene	10 UJ	1 J	3 J	10 UJ	10 UJ
trans-1,3-Dichloropropene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Bromoform	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-Methyl-2-Pentanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-Hexanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Tetrachloroethene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1,2,2-Tetrachloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Toluene	10 UJ	10 UJ	3 J	10 UJ	10 UJ
Chlorobenzene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Ethylbenzene	10 UJ	10 UJ	3 J	10 UJ	10 UJ
Styrene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Xylene (total)	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Total Number of TICS *	0	0	0	0	0

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table.

Semivolatile Organic Analysis for Groundwater Samples LoBue #2					
Semivolatile Compound	Sample Location and Number Concentrations in ug/L				
	GW05 EWT63	GW06 Bckgnd. EWT64	GW06 Dup. EWT65	GW07 EWT66	GW08 EWT67
Phenol	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)Ether	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10 U	10 U	10 U	10 U	10 U
n-Nitroso-Di-n-Propylamine	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)Methane	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	25 U	25 U	25 U	25 U	25 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	25 U	25 U	25 U	25 U	25 U
Dimethyl Phthalate	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	25 U	25 U	25 U	25 U	25 U
Acenaphthene	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol	25 U	25 U	25 U	25 U	25 U
Dibenzofuran	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U

Semivolatile Organic Analysis for Groundwater Samples (Continued)					
LoBue #2					
Semivolatile Compound	Sample Location and Number				
	Concentrations in ug/L				
	GW05 EWT63	GW06 Bckgnd. EWT64	GW06 Dup. EWT65	GW07 EWT66	GW08 EWT67
Fluorene	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-Methylphenol	25 U	25 U	25 U	25 U	25 U
n-Nitrosodiphenylamine	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	25 U	25 U	25 U	25 U	0.9 J
Phenanthrene	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U
Carbazole	10 U	10 U	10 U	10 U	10 U
di-n-Butylphthalate	10 U	1 J	1 J	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Chrysene	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)Phthalate	10 U	27	29	5 J	20
di-n-Octyl Phthalate	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzo(b)Fluoranthene	10 U	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	10 U	10 U	10 U	10 U	10 U
Benzo(a)Pyrene	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)Anthracene	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U	10 U	10 U	10 U
Total Number of TICs *	14	15	18	11	16

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table.

gw-semiv

Semivolatile Organic Analysis for Groundwater Samples Tentatively Identified Compounds LoBue #2 Concentrations in ug/L		
Compound Name	Retention Time	Estimated Concentration
Sample GW05		
Unknown	8.28	10 J
Unknown	8.83	4 J
Unknown	14.00	3 J
Hexanoic acid, 6-amino-	14.08	400 JN
Unknown	14.58	70 J
Unknown	17.73	2 J
Unknown	24.65	10 J
Unknown	25.03	30 J
Unknown	26.08	10 J
Unknown	26.22	80 J
Unknown	26.42	8 J
Octadecanoic acid, 2-methylp	26.47	10 JN
Octadecanoic acid, butyl	26.83	30 JN
Phenol, 4,4'-butylidenebis	29.62	20 JN
Sample GW06 Background		
Hexanoic acid, 6-amino-	14.42	100 JN
Unknown	23.90	80 J
Unknown hydrocarbon	24.12	10 J
Unknown	24.97	100 J
Unknown	25.05	300 J
Unknown	26.32	20 J
Unknown	26.38	20 J
Octadecanoic acid, butyl est	26.85	300 JN
Unknown	28.50	20 J
Ethanol, 2-(9-octadecenyloxy	28.68	30 JN
Unknown	30.78	10 J
Unknown	30.90	30 J
Unknown Hydrocarbon	31.62	20 J
Unknown Hydrocarbon	33.77	10 J
Unknown	38.83	10 J
Sample GW06 Duplicate		
1,2-Propanediol	4.82	60 JN
Hexanoic acid, 6-amino-	14.38	200 JN
Unknown	14.48	100 J
Unknown	23.90	90 J
Unknown	24.98	200 J
Unknown	25.05	200 J
Unknown	26.22	20 J
Unknown	26.33	30 J

Semivolatile Organic Analysis for Groundwater Samples (Continued)		
Tentatively Identified Compounds		
LoBue #2		
Concentrations in ug/L		
Compound Name	Retention Time	Estimated Concentration
Sample GW06 Duplicate (Continued)		
Ethanol, 2-(9-octadecenyloxy	26.38	20 JN
Octadecanoic acid, butyl est	26.85	200 JN
Unknown	28.57	20 J
Unknown	28.70	30 J
Unknown	30.78	30 J
Unknown	30.90	50 J
Ethanol, 2-(octadecyloxy)-	31.07	30 JN
Unknown hydrocarbon	31.22	50 J
Unknown hydrocarbon	31.62	20 J
Ethanol, 2-(tetradecyloxy)-	33.77	20 JN
Sample GW07		
Unknown	8.30	10 J
Unknown	8.85	5 J
Unknown	10.37	10 J
2-Propanol, 1,1'-(1-methyl-	10.68	7 JN
Unknown	10.77	10 J
Hexanoic acid, 6-amino-	14.42	200 JN
Unknown	21.20	6 J
Unknown	26.32	500 J
Unknown	26.52	5 J
Unknown	31.05	3 J
Unknown	34.42	3 J
Sample GW08		
Unknown	7.55	30 J
Unknown	7.95	9 J
Unknown	8.27	7 J
Hexanoic acid, 6-amino-	14.70	2000 JN
Unknown	14.90	200 J
Benzenepropanoic acid	15.45	4 JN
Unknown	23.90	20 J
Unknown hydrocarbon	24.10	5 J
Unknown	24.95	40 J
Unknown	25.03	200 J
Unknown	25.93	20 J
Unknown	26.35	60 J
Octadecanoic acid, butyl est	26.82	200 JN
Unknown	28.68	10 J
Unknown	30.88	30 J
Unknown	39.78	40 J

gw-svtic

Pesticide/PCB Analysis for Groundwater Samples					
LoBue #2					
Pesticide/ PCB	Sample Location and Number				
	Concentrations in ug/L				
	GW05 EWT63	GW06 Bckgnd. EWT64	GW06 Dup. EWT65	GW07 EWT66	GW08 EWT67
Alpha-BHC	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U
Beta-BHC	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U
Delta-BHC	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U
Gamma-BHC (Lindane)	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U
Heptachlor	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U
Aldrin	0.0029 JP	0.050 UJ	0.050 UJ	0.050 UJ	0.050 U
Heptachlor Epoxide	0.0015 JP	0.0088 JP	0.017 JP	0.0018 JP	0.050 U
Endosulfan I	0.050 UJ	0.050 UJ	0.023 JP	0.050 UJ	0.050 U
Dieldrin	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U
4,4'-DDE	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U
Endrin	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U
Endosulfan II	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U
4,4'-DDD	0.10 UJ	0.0033 JP	0.0076 JP	0.10 UJ	0.10 U
Endosulfan Sulfate	0.10 UJ	0.01 UJ	0.10 UJ	0.10 UJ	0.10 U
4,4'-DDT	0.10 UJ	0.010 JP	0.10 UJ	0.10 UJ	0.10 U
Methoxychlor	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 U
Endrin Ketone	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U
Endrin Aldehyde	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 U
Alpha-Chlordane	0.050 UJ	0.021 JP	0.0050 JP	0.050 UJ	0.050 U
Gamma-Chlordane	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.0017 JP
Toxaphene	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U
Aroclor-1016	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1221	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U
Aroclor-1232	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1242	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1248	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1254	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1260	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U

gw-pest

Inorganic Analysis for Groundwater Samples					
LoBue #2					
Metals and Cyanide	Sample Locations and Number				
	Concentrations in ug/L				
	GW05 MEWZ61	GW06 Backgd. MEWZ62	GW06 Dup. MEWZ63	GW07 MEWZ64	GW08 MEWZ65
Aluminum	20.9 U	20.9 U	20.9 U	20.9 U	20.9 U
Antimony	15.3 U	20.7 UB	15.3 U	20.8 UB	20.8 UB
Arsenic	10.4 J	1.7 U	1.7 U	1.7 U	1.7 U
Barium	49.0 JB	44.0 JB	45.8 JB	41.5 JB	11.8 JB
Beryllium	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Cadmium	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
Calcium	222000 J	112000 J	117000 J	124000 J	79400 J
Chromium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Cobalt	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U
Copper	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Iron	3540 J	85.0 JB	96.3 JB	1110 J	205 J
Lead	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Magnesium	125000 J	55600 J	57500 J	77400 J	41700 J
Manganese	181	61.6	64.4	455	84.8
Mercury	0.20 UJN	0.20 UJN	0.2 UJN	0.20 UN	0.20 UJN
Nickel	16.0 B	7.4 U	7.4 U	7.4 U	7.4 U
Potassium	5940	22600	23300	4130 B	6820
Selenium	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Silver	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Sodium	461000 J	108000 J	111000 J	19800 J	16000 J
Thallium	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U
Vanadium	3.9 JB	2.0 U	2.0 U	2.0 U	2.0 U
Zinc	40.1 UJB	4.2 UJB	3.1 UB	6.4 UB	3.6 UB
Cyanide	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U

gw-metal

Volatile Organic Analysis for Residential Well Samples		
LoBue #2		
Volatile Compound	Sample Location and Number	
	Concentrations in ug/L	
	RW01 21327/8019HQ-01	RW01 Dup. 21327/8019HQ-02
Chloromethane	1 U	1 U
Bromomethane	1 U	1 U
Vinyl Chloride	1 U	1 U
Chloroethane	1 UJ	1 UJ
Methylene Chloride	2 U	2 U
Acetone	5 UJ	5 UJ
Carbon Disulfide	1 U	1 U
1,1-Dichloroethene	1 U	1 U
1,1-Dichloroethane	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U
Chloroform	1 U	1 U
1,2-Dichloroethane	1 U	1 U
2-Butanone	5 UJ	5 UJ
1,1,1-Trichloroethane	1 U	1 U
Carbon Tetrachloride	1 U	1 U
Bromodichloromethane	1 U	1 U
1,2-Dichloropropane	1 U	1 U
cis-1,3-Dichloropropene	1 U	1 U
Trichloroethene	1 U	1 U
Dibromochloromethane	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U
1,2-Dibromoethane	1 U	1 U
Benzene	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U
Bromoform	1 U	1 U
4-Methyl-2-Pentanone	5 U	5 U
2-Hexanone	5 U	5 U
Tetrachloroethene	1 U	1 U
Bromochloromethane	1 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U
Toluene	1 U	1 U
Chlorobenzene	1 U	1 U
Ethylbenzene	1 U	1 U
Styrene	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U
Total Xylenes	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U
1,2-Dibromo-3-Chloropropane	1 U	1 U
Total Number of TICS *	0	0

*Number, not concentration, of tentatively identified compounds (TICS) is reported on this table.

rw-volat

Semivolatile Organic Analysis for Residential Well Samples		
LoBue #2		
Semivolatile Compound	Sample Location and Number	
	Concentrations in ug/L	
	RW01 21327/8019HQ-01	RW01 Dup. 21327/8019HQ-02
Phenol	5 U	5 U
bis(2-Chloroethyl)Ether	5 U	5 U
2-Chlorophenol	5 U	5 U
2-Methylphenol	5 U	5 U
2,2'-oxybis(1-Chloropropane)	5 U	5 U
4-Methylphenol	5 U	5 U
n-Nitroso-Di-n-Propylamine	5 U	5 U
Hexachloroethane	5 U	5 U
Nitrobenzene	5 UJ	5 UJ
Isophorone	5 U	5 U
2-Nitrophenol	5 U	5 U
2,4-Dimethylphenol	5 U	5 U
Bis(2-Chloroethoxy)Methane	5 U	5 U
2,4-Dichlorophenol	5 U	5 U
1,2,4-Trichlorobenzene	5 U	5 U
Naphthalene	5 U	5 U
4-Chloroaniline	5 U	5 U
Hexachlorobutadiene	5 UJ	5 UJ
4-Chloro-3-Methylphenol	5 U	5 U
2-Methylnaphthalene	5 U	5 U
Hexachlorocyclopentadiene	5 U	5 U
2,4,6-Trichlorophenol	5 U	5 U
2,4,5-Trichlorophenol	20 U	20 U
2-Chloronaphthalene	5 U	5 U
2-Nitroaniline	20 U	20 U
Dimethyl Phthalate	5 U	5 U
Acenaphthylene	5 U	5 U
2,6-Dinitrotoluene	5 U	5 U
3-Nitroaniline	20 U	20 U
Acenaphthene	5 U	5 U
2,4-Dinitrophenol	20 UJ	20 UJ
4-Nitrophenol	20 UJ	20 UJ
Dibenzofuran	5 U	5 U
2,4-Dinitrotoluene	5 U	5 U
Diethylphthalate	5 U	5 U
4-Chlorophenyl-phenylether	5 U	5 U
Fluorene	5 U	5 U
4-Nitroaniline	20 U	20 U
4,6-Dinitro-2-Methylphenol	20 U	20 U
n-Nitrosodiphenylamine	5 U	5 U
4-Bromophenyl-phenylether	5 U	5 U

Semivolatile Organic Analysis for Residential Well Samples (Continued)		
LoBue #2		
Semivolatile Compound	Sample Location and Number	
	Concentrations in ug/L	
	RW01 21327/8019HQ-01	RW01 Dup. 21327/8019HQ-02
Hexachlorobenzene	5 U	5 U
Pentachlorophenol	20 U	20 U
Phenanthrene	5 U	5 U
Anthracene	5 U	5 U
di-n-Butylphthalate	5 U	5 U
Fluoranthene	5 U	5 U
Pyrene	5 U	5 U
Butylbenzylphthalate	5 U	5 U
3,3'-Dichlorobenzidine	5 U	5 U
Benzo(a)Anthracene	5 U	5 U
Chrysene	5 U	5 U
bis(2-Ethylhexyl)Phthalate	5 U	5 U
di-n-Octyl Phthalate	5 U	5 U
Benzo(b)Fluoranthene	5 U	5 U
Benzo(k)Fluoranthene	5 U	5 U
Benzo(a)Pyrene	5 U	5 U
Indeno(1,2,3-cd)Pyrene	5 U	5 U
Dibenzo(a,h)Anthracene	5 U	5 U
Benzo(g,h,i)Perylene	5 U	5 U
Total Number of TICs *	0	0

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table.

Pesticide/PCB Analysis for Residential Well Samples		
LoBue #2		
Pesticide/ PCB	Sample Location and Number	
	Concentrations in ug/L	
	RW01 21327/8019HQ-01	RW01 Dup. 21327/8019HQ-02
Alpha-BHC	0.010 U	0.010 U
Beta-BHC	0.010 U	0.010 U
Delta-BHC	0.010 U	0.010 U
Gamma-BHC (Lindane)	0.010 U	0.010 U
Heptachlor	0.010 U	0.010 U
Aldrin	0.010 U	0.010 U
Heptachlor Epoxide	0.010 U	0.010 U
Endosulfan I	0.010 U	0.010 U
Dieldrin	0.020 U	0.020 U
4,4'-DDE	0.020 U	0.020 U
Endrin	0.020 U	0.020 U
Endosulfan II	0.020 U	0.020 U
4,4'-DDD	0.020 U	0.020 U
Endosulfan Sulfate	0.020 U	0.020 U
4,4'-DDT	0.020 U	0.020 U
Methoxychlor	0.10 U	0.10 U
Endrin Ketone	0.020 U	0.020 U
Endrin Aldehyde	0.020 U	0.020 U
Alpha-Chlordane	0.010 U	0.010 U
Gamma-Chlordane	0.010 U	0.010 U
Toxaphene	1.0 U	1.0 U
Aroclor-1016	0.20 U	0.20 U
Aroclor-1221	0.40 U	0.40 U
Aroclor-1232	0.20 U	0.20 U
Aroclor-1242	0.20 U	0.20 U
Aroclor-1248	0.20 U	0.20 U
Aroclor-1254	0.20 U	0.20 U
Aroclor-1260	0.20 U	0.20 U

rw-pest

Inorganic Analysis for Residential Well Samples		
LoBue #2		
Metals and Cyanide	Sample Location and Number	
	Concentrations in ug/L	
	RW01 21327/7995E-02-01	RW01 Dup. 21327/7995E-02-02
Aluminum	44.0 U	44.0 U
Antimony	28.0 RU	28.0 RU
Arsenic	3.0 U	3.0 U
Barium	79.2	81.7
Beryllium	1.5 B	1.5 B
Cadmium	0.50 U	0.50 U
Calcium	126000	130000
Chromium	9.0 U	9.0 U
Cobalt	8.0 U	8.0 U
Copper	89.4 JN	133 JN
Iron	948 J	1290 J
Lead	2.0 U	2.0 U
Magnesium	62400	64200
Manganese	19.2 R	19.2 R
Mercury	0.20 U	0.20 U
Nickel	6.0 RU	6.0 RU
Potassium	1410 B	1800 B
Selenium	2.0 U	2.0 U
Silver	12.5	10.4
Sodium	34000	35100
Thallium	2.0 U	2.0 U
Vanadium	8.0 U	8.0 U
Zinc	177	209
Cyanide	10.0 U	10.0 U

rw-metal

Volatile Organic Analysis for Sediment Samples

LoBue #2

Volatile Compound	Sample Location and Number / Concentrations in ug/kg								
	ST01 Bckgnd. ESE61	ST02 ESE62	ST02 Dup. ESE63	ST03 ESE64	ST04 ESE65	ST05 ESE66	ST06 ESE67	ST07 ESE68	ST08 ESE69
Chloromethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	25 J
Bromomethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Vinyl Chloride	14 UJ	14 UJ	16 UJ	13 UJ	11 UJ	26 UJ	16 UJ	13 UJ	15 UJ
Chloroethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Methylene Chloride	14 UJB	14 UJB	21 UB	13 UJB	11 UJB	26 UJB	16 UJB	16 UB	36 UJB
Acetone	18 UB	14 U	26	13 U	19 UJB	96 B	16 U	40	51 J
Carbon Disulfide	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
1,1-Dichloroethene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
1,1-Dichloroethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
1,2-Dichloroethene (total)	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Chloroform	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
1,2-Dichloroethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
2-Butanone	14 UJ	14 UJ	16 U	13 UJ	11 UJ	26 UJ	16 UJ	13 U	15 UJ
1,1,1-Trichloroethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Carbon Tetrachloride	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Bromodichloromethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
1,2-Dichloropropane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
cis-1,3-Dichloropropene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Trichloroethene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Dibromochloromethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
1,1,2-Trichloroethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Benzene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
trans-1,3-Dichloropropene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Bromoform	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
4 Methyl-2-Pentanone	14 UJ	14 UJ	16 U	13 UJ	11 UJ	26 UJ	16 UJ	13 U	15 UJ
2-Hexanone	14 UJ	14 UJ	16 U	13 UJ	11 UJ	26 UJ	16 UJ	13 U	15 UJ
Tetrachloroethene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
1,1,2,2-Tetrachloroethane	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Toluene	14 U	14 U	16 U	13 U	11 UJ	26 U	5 J	13 U	15 J
Chlorobenzene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Ethylbenzene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Styrene	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Xylene (total)	14 U	14 U	16 U	13 U	11 UJ	26 U	16 U	13 U	15 UJ
Total Number of TICs *	0	0	1	0	0	0	0	1	3

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table.

st-vol

Volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds LoBue#2 Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample ST02 (Duplicate)		
Unknown	25.94	13 J
Sample ST07		
Unknown	25.94	9 J
Sample ST08		
Unknown	5.17	9 J
Terpene Isomer	19.93	20 J
Unknown	25.96	9 J

vtic-st

Semivolatile Organic Analysis for Sediment Samples									
LoBue #2									
Semivolatile Compound	Sample Location and Number / Concentrations in ug/kg								
	ST01 Bckgnd. ESE61	ST02 ESE62	ST02 Dup. ESE63	ST03 ESE64	ST04 ESE65	ST05 ESE66	ST06 ESE67	ST07 ESE68	ST08 ESE69
Phenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
bis(2-Chloroethyl)Ether	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2-Chlorophenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
1,3-Dichlorobenzene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
1,4-Dichlorobenzene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
1,2-Dichlorobenzene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2-Methylphenol	470 UJ	480 UJ	520 UJ	440 UJ	380 UJ	850 UJ	540 UJ	460 UJ	520 UJ
2,2'-oxybis(1-Chloropropane)	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
4-Methylphenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
n-Nitroso-Di-n-Propylamine	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Hexachloroethane	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Nitrobenzene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Isophorone	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2-Nitrophenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2,4-Dimethylphenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
bis(2-Chloroethoxy)Methane	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2,4-Dichlorophenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
1,2,4-Trichlorobenzene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Naphthalene	470 U	480 U	520 U	440 U	44 J	850 U	540 U	460 U	520 U
4-Chloroaniline	470 UJ	480 UJ	520 UJ	440 UJ	380 UJ	850 UJ	540 UJ	460 UJ	520 UJ
Hexachlorobutadiene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
4-Chloro-3-Methylphenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2-Methylnaphthalene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Hexachlorocyclopentadiene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2,4,6-Trichlorophenol	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2,4,5-Trichlorophenol	1100 U	1200 U	1200 U	1100 U	920 UJ	2100 U	1300 U	1100 U	1300 U
2-Chloronaphthalene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2-Nitroaniline	1100 U	1200 U	1200 U	1100 U	920 UJ	2100 U	1300 U	1100 U	1300 U
Dimethyl Phthalate	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Acenaphthylene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2,6-Dinitrotoluene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
3-Nitroaniline	1100 U	1200 U	1200 U	1100 U	920 UJ	2100 U	1300 U	1100 U	1300 U
Acenaphthene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U

Semivolatile Organic Analysis for Sediment Samples (Continued)

LoBue #2

Semivolatile Compound	Sample Location and Number / Concentrations in ug/kg								
	ST01 Bckgnd. ESE61	ST02 ESE62	ST02 Dup. ESE63	ST03 ESE64	ST04 ESE65	ST05 ESE66	ST06 ESE67	ST07 ESE68	ST08 ESE69
2,4-Dinitrophenol	1100 U	1200 U	1200 U	1100 U	920 UJ	2100 U	1300 U	1100 U	1300 U
4-Nitrophenol	1100 UJ	1200 UJ	1200 UJ	1100 UJ	920 UJ	2100 UJ	1300 UJ	1100 UJ	1300 UJ
Dibenzofuran	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
2,4-Dinitrotoluene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Diethylphthalate	470 U	480 UJB	520 U	440 UJB	1100 UJB	850 U	540 U	460 U	520 U
4-Chlorophenyl-phenylether	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Fluorene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
4-Nitroaniline	1100 U	1200 U	1200 U	1100 U	920 UJ	2100 U	1300 U	1100 U	1300 U
4,6-Dinitro-2-Methylphenol	1100 U	1200 U	1200 U	1100 U	920 UJ	2100 U	1300 U	1100 U	1300 U
n-Nitrosodiphenylamine	470 UJ	480 UJ	520 UJ	440 UJ	380 UJ	850 UJ	540 UJ	460 UJ	520 UJ
4-Bromophenyl-phenylether	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Hexachlorobenzene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Pentachlorophenol	1100 U	1200 U	1200 U	1100 U	920 UJ	2100 U	1300 U	1100 U	1300 U
Phenanthrene	470 U	480 U	520 U	440 U	55 J	420 J	240 J	66 J	65 J
Anthracene	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Carbazole	470 UJ	480 UJ	520 UJ	440 UJ	380 UJ	850 UJ	540 UJ	460 UJ	520 UJ
di-n-Butylphthalate	470 U	480 U	520 U	440 U	380 UJ	51 J	540 U	460 U	520 U
Fluoranthene	52 J	140 J	170 J	440 U	43 J	430 J	260 J	93 J	110 J
Pyrene	470 U	150 J	160 J	440 U	67 J	570 J	410 J	91 J	120 J
Butylbenzylphthalate	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
3,3'-Dichlorobenzidine	470 UJ	480 UJ	520 UJ	440 UJ	380 UJ	850 UJ	540 UJ	460 UJ	520 UJ
Benzo(a)Anthracene	470 U	480 U	520 U	440 U	380 UJ	220 J	290 J	460 U	520 U
Chrysene	470 U	82 J	95 J	440 U	40 J	230 J	490 J	56 J	67 J
bis(2-Ethylhexyl)Phthalate	470 U	120 J	190 J	440 U	190 UJB	250 J	65 J	73 J	56 J
di-n-Octyl Phthalate	470 U	480 U	520 U	440 U	380 UJ	850 U	540 U	460 U	520 U
Benzo(b)Fluoranthene	470 U	90 J	130 J	440 U	72 J	250 J	230 J	62 J	79 J
Benzo(k)Fluoranthene	470 U	480 U	67 J	440 U	380 UJ	120 J	110 J	460 U	520 U
Benzo(a)Pyrene	470 U	480 U	520 U	440 U	380 UJ	210 J	330 J	460 U	63 J
Indeno(1,2,3-cd)Pyrene	470 U	74 J	81 J	440 U	380 UJ	130 J	140 J	460 U	520 U
Dibenzo(a,h)Anthracene	470 U	480 U	520 U	440 U	380 UJ	850 U	57 J	460 U	520 U
Benzo(g,h,i)Perylene	470 U	480 U	89 J	440 U	380 UJ	140 J	290 J	47 J	75 J
Total Number of TICs*	3	15	14	8	15	16	13	10	9

* Number, not concentrations, of tentatively identified compounds (TICs) is reported on this table.

SI-6V

Semivolatile Organic Analysis for Sediment Samples Tentatively Identified Compounds LoBue #2 Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample ST01		
Unknown	5.70	140 J
Molecular Sulfur	24.79	450 JN
Unknown	36.28	120 J
Sample ST02		
Unknown	5.52	1600 J
Unknown	5.82	650 J
Unknown	12.51	140 J
Pharmaceutical Sulfur	17.50	140 JN
Unknown Hydrocarbon	19.40	120 J
Unknown Hydrocarbon	20.08	140 J
Unknown Hydrocarbon	20.87	340 J
Unknown Hydrocarbon	22.28	96 J
Unknown Hydrocarbon	23.51	96 J
Molecular Sulfur	24.85	2200 JN
Unknown Hydrocarbon	33.98	380 J
Unknown	34.83	190 J
Unknown	36.96	260 J
Unknown	37.93	170 J
Unknown	38.54	190 J
Sample ST02 Duplicate		
Unknown	5.48	1400 J
Unknown	5.81	730 J
Unknown	12.51	100 J
Pharmaceutical Sulfur	17.50	130 JN
Unknown Hydrocarbon	20.07	180 J
Unknown Hydrocarbon	20.89	310 J
Molecular Sulfur	24.88	2200 JN
Unknown	28.87	180 J
Unknown Hydrocarbon	33.98	540 J
Unknown	34.82	290 J
Unknown	36.96	540 J
Unknown	37.36	420 J
Unknown	37.94	670 J
Unknown	38.54	570 J
Sample ST03		
Unknown	5.48	1200 J
Unknown	5.75	150 J
Unknown	12.50	89 J
Unknown Hydrocarbon	20.88	180 J
Molecular Sulfur	24.78	200 JN
Unknown	25.65	150 J
Unknown Hydrocarbon	25.95	110 J
Unknown Hydrocarbon	33.98	180 J

Semivolatile Organic Analysis for Sediment Samples (Continued)		
Tentatively Identified Compounds		
LoBue #2		
Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample ST04		
Unknown	5.31	1500 J
Unknown	11.46	76 J
Unknown	12.32	320 J
Unknown Hydrocarbon	16.11	95 J
Unknown Hydrocarbon	20.66	230 J
Unknown Hydrocarbon	22.02	95 J
Unknown Hydrocarbon	23.33	130 J
Unknown Hydrocarbon	24.57	95 J
Unknown Hydrocarbon	25.77	130 J
Unknown Hydrocarbon	26.90	130 J
Unknown Hydrocarbon	33.78	230 J
Unknown	34.61	290 J
Unknown	35.29	190 J
Unknown	37.04	610 J
Unknown	40.00	290 J
Sample ST05		
Unknown	2.23	640 J
Unknown	2.36	980 J
Unknown	5.51	2000 J
Unknown	8.50	600 J
Unknown	11.63	1000 JB
Unknown	23.21	210 J
Unknown Carboxylic Acid	24.35	300 J
Molecular Sulfur	25.00	8900 JN
Unknown Hydrocarbon	30.26	470 J
Unknown Hydrocarbon	32.18	940 J
Unknown Hydrocarbon	33.99	2100 J
Unknown	34.85	680 J
Unknown	36.87	600 J
Unknown	36.95	600 J
Unknown	37.35	1200 J
Unknown	37.95	850 J
Sample ST06		
Unknown	1.53	730 J
Unknown	2.22	330 J
Unknown	2.37	650 J
Pharmaceutical Sulfur	17.50	140 JN
Unknown Hydrocarbon	20.85	160 J
Molecular Sulfur	24.88	2300 JN
Unknown PAH	27.07	190 J
Unknown OXY. Hydrocarbon	27.35	540 J
Unknown Hydrocarbon & Unknown	28.19	110 J

Semivolatile Organic Analysis for Sediment Samples (Continued)		
Tentatively Identified Compounds		
LoBue #2		
Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample ST06 (Continued)		
Unknown PAH	30.62	240 J
Unknown PAH	31.74	240 J
Unknown PAH	32.99	410 J
Unknown Hydrocarbon & Unknown	34.00	520 J
Sample ST07		
Unknown	5.70	210 J
Unknown	6.01	140 J
Pharmaceutical Sulfur	17.52	140 JN
Molecular Sulfur	24.89	1800 JN
Unknown Hydrocarbon	32.22	230 J
Unknown	32.83	160 J
Unknown Hydrocarbon	34.02	510 J
Unknown	34.87	160 J
Unknown Hydrocarbon	35.70	600 J
Unknown	38.31	440 J
Sample ST08		
Molecular Sulfur	24.88	2600 JN
Unknown Hydrocarbon	32.19	420 J
Unknown Hydrocarbon	33.98	1000 J
Unknown	34.85	340 J
Unknown	35.16	160 J
Unknown Hydrocarbon	35.66	160 J
Unknown OXY. Hydrocarbon	36.81	180 J
Unknown	37.95	970 J
Unknown	38.55	1600 J

svtic-st

Pesticide/PCB Analysis for Sediment Samples

LoBue #2

Pesticide / PCB	Sample Location and Number / Concentrations in ug/kg								
	ST01 Bckgnd.	ST02	ST02 Dup.	ST03	ST04	ST05	ST06	ST07	ST08
	ESE61	ESE62	ESE63	ESE64	ESE65	ESE66	ESE67	ESE68	ESE69
Alpha-BHC	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Beta-BHC	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Delta-BHC	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Gamma-BHC (Lindane)	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Heptachlor	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Aldrin	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Heptachlor Epoxide	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Endosulfan I	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Dieldrin	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
4,4'-DDE	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
Endrin	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
Endosulfan II	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
4,4'-DDD	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
Endosulfan Sulfate	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
4,4'-DDT	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
Methoxychlor	24 UJ	25 UJ	27 U	23 UJ	20 U	44 U	28 U	24 U	27 U
Endrin Ketone	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
Endrin Aldehyde	4.7 U	4.8 U	5.2 U	4.4 U	3.8 U	8.5 U	5.4 U	4.6 U	5.2 U
Alpha-Chlordane	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Gamma-Chlordane	2.4 U	2.5 U	2.7 U	2.3 U	2.0 U	4.4 U	2.8 U	2.4 U	2.7 U
Toxaphene	240 U	250 U	270 U	230 U	200 U	440 U	280 U	240 U	270 U
Aroclor-1016	47 U	48 U	52 U	44 U	38 U	85 U	54 U	46 U	52 U
Aroclor-1221	96 U	97 U	100 U	89 U	77 U	170 U	110 U	93 U	110 U
Aroclor-1232	47 U	48 U	52 U	44 U	38 U	85 U	54 U	46 U	52 U
Aroclor-1242	47 U	48 U	52 U	44 U	38 U	85 U	54 U	46 U	52 U
Aroclor-1248	47 U	48 U	52 U	44 U	38 U	85 U	54 U	46 U	52 U
Aroclor-1254	47 U	48 U	52 U	44 U	38 U	85 U	54 U	45 JP	52 U
Aroclor-1260	47 U	48 U	52 U	44 U	38 U	85 U	54 U	46 U	52 U

st-pest

Inorganic Analysis for Sediment Samples

LoBue #2

Metals and Cyanide	Sample Location and Number								
	Concentrations in mg/kg								
	ST01 Backgnd. MEBV21	ST02 MEBV22	ST02 Dup. MEBV23	ST03 MEBV24	ST04 MEBV25	ST05 MEBV26	ST06 MEBV27	ST07 MEBV28	ST08 MEBV29
Aluminum	15900 J	7810 J	12500 J	17800 J	3770 J	12300 J	10800 J	6360 J	8490 J
Antimony	11.0 UJN	10.0 UJN	13.8 JNB	10 UJN	9.2 UJN	30.2 UJN	14.8 UJN	11.7 UJN	14.5 UJN
Arsenic	2.1 B	23.1	8.9	6.7	6.0	7.2 B	7.1	4.4	4.1
Barium	95.4	49.8 B	49.5 B	68.6	118	132 B	112	212	85.4
Beryllium	0.98 JB	0.68 JB	0.73 JB	1.1 JB	0.26 U	1.2 JB	0.84 JB	0.34 B	0.68 B
Cadmium	1.1 B	6.8	4.5	1.4 B	1.7	2.6 U	5.6	2.2	2.1 B
Calcium	4200 J	41100 J	31700 J	63500 J	12200 J	30700 J	64400 J	26700 J	99400 J
Chromium	23.9	32.0	39.1	41.2	145	48.3	182	62.4	17.4
Cobalt	9.9 B	17.1	14.7	13.5 B	60.0	27.7 B	24.8	15.6 B	10.0 B
Copper	17.5	38.3	30.6	17.3	41.8	67.1	92.6	48.8	22.1
Iron	15700	20300	23100	25400	41500	32500	41300	14000	16800
Lead	18.1	124	171	11.7 S	71.5	85.3 S	174	291	85.7
Magnesium	4070	21300	19000	29600	98800	27600	43300	18600	59500
Manganese	193	669	519	1060	4260	666	2380	683	299
Mercury	0.16 U	0.14 U	0.14 U	0.14 U	0.13 U	0.73	0.21 U	0.29	0.21 U
Nickel	18.3	50.8	39.1	39.4	732	144	183	96.0	16.8
Potassium	1820	1650	2570	5240	676 B	1740 B	2500	1110 B	1660 B
Selenium	0.94 U	1.1 JBW	0.84 U	0.85 UJW	0.79 UJW	2.6 U	1.3 U	1.0 U	1.2 UJW
Silver	1.3 U	1.1 U	1.1 U	1.1 U	1.0 U	3.4 U	1.7 U	1.3 U	1.7 U
Sodium	329 JB	228 JB	241 JB	243 JB	138 UB	998 JB	541 JB	298 JB	257 JB
Thallium	0.94 U	0.86 UJW	0.84 UJW	0.85 UJW	0.79 U	2.6 UJW	1.3 UJW	1.0 UJW	1.2 UJW
Vanadium	27.5	17.6	25.3	33.9	3.0 B	36.2 B	46.2	24.9	18.8 B
Zinc	69.0 JE	963 JE	636 JE	58.8 JE	66.7 JE	341 JE	939 JE	396 JE	118 JE
Cyanide	0.78 U	0.72 U	0.70 U	0.71 U	0.66 U	2.2 U	1.1 U	0.84 U	1.0 U

st-metal

Volatile Organic Analysis for Soil Samples
LoBuc #2

Volatile Compound	Sample Location and Number / Concentrations in ug/kg								
	SS01 Bckgnd ESE71	SS02 ESE72	SS02 Dup. ESE73	SS03 ESE74	SS04 ESE75	SS05 ESE76	SS06 ESE77	SS08 ESE79	SS09 ESE80
Chloromethane	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
Bromomethane	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
Vinyl Chloride	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
Chloroethane	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
Methylene Chloride	11	17 J	15 J	9 J	3 J	4 J	10 J	10 J	5 J
Acetone	11 U	11 UJ	13 UJ	26 J	25	31	13	11 U	18
Carbon Disulfide	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
1,1-Dichloroethene	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
1,1-Dichloroethane	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
1,2-Dichloroethene (total)	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
Chloroform	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
1,2-Dichloroethane	11 U	11 UJ	13 UJ	14 UJ	12 U	13 U	12 U	11 U	11 U
2-Butanone	10 J	11 UJ	13 UJ	23 J	49	29	10 J	6 J	38
1,1,1-Trichloroethane	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Carbon Tetrachloride	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Bromodichloromethane	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
1,2-Dichloropropane	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
cis-1,3-Dichloropropene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Trichloroethene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Dibromochloromethane	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
1,1,2-Trichloroethane	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Benzene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
trans-1,3-Dichloropropene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Bromoform	11 U	11 U	13 U	14 UJ	12 U	13 U	12 U	11 U	11 U
4-Methyl-2-Pentanone	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 UJ	11 UJ
2-Hexanone	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 UJ	11 UJ
Tetrachloroethene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
1,1,2,2-Tetrachloroethane	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Toluene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Chlorobenzene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Ethylbenzene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Styrene	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Xylene (total)	11 UJ	11 UJ	13 UJ	14 UJ	12 U	13 U	12 UJ	11 U	11 U
Total Number of TICs *	0	0	0	2	0	0	0	0	2

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table.

ss-vol

Volatile Organic Analysis for Soil Samples Tentatively Identified Compounds LoBue #2 Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS03		
Unknown	10.94	17 J
Unknown	18.17	23 J
Sample SS09		
Unknown	11.05	7 J
1,2-Dibromo-3-chloropropane	18.44	6 JN

ss-vtic

Semivolatile Organic Analysis for Soil Samples

LoBue #2

Semivolatile Compound	Sample Location and Number / Concentrations in ug/kg								
	SS01 Bckgnd	SS02	SS02 Dup.	SS03	SS04	SS05	SS06	SS08	SS09
	ESE71	ESE72	ESE73	ESE74	ESE75	ESE76	ESE77	ESE79	ESE80
Phenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
bis(2-Chloroethyl)Ether	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2-Chlorophenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
1,3-Dichlorobenzene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
1,4-Dichlorobenzene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
1,2-Dichlorobenzene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2-Methylphenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2,2'-oxybis(1-Chloropropane)	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
4-Methylphenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
n-Nitroso-Di-n-Propylamine	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Hexachloroethane	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Nitrobenzene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Isophorone	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2-Nitrophenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2,4-Dimethylphenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
bis(2-Chloroethoxy)Methane	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2,4-Dichlorophenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
1,2,4-Trichlorobenzene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Naphthalene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
4-Chloroaniline	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Hexachlorobutadiene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
4-Chloro-3-Methylphenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2-Methylnaphthalene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Hexachlorocyclopentadiene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2,4,6-Trichlorophenol	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2,4,5-Trichlorophenol	860 U	920 U	1000 U	1200 U	930 U	1000 U	960 U	840 U	910 U
2-Chloronaphthalene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2-Nitroaniline	860 U	920 U	1000 U	1200 U	930 U	1000 U	960 U	840 U	910 U
Dimethyl Phthalate	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Acenaphthylene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2,6-Dinitrotoluene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
3-Nitroaniline	860 U	920 U	1000 U	1200 U	930 U	1000 U	960 U	840 U	910 U
Acenaphthene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U

Semivolatile Organic Analysis for Soil Samples (Continued)

Lab #2

Semivolatile Compound	Sample Location and Number / Concentrations in ug/kg								
	SS01 Bckgnd ESE71	SS02 ESE72	SS02 Dup. ESE73	SS03 ESE74	SS04 ESE75	SS05 ESE76	SS06 ESE77	SS08 ESE79	SS09 ESE80
2,4-Dinitrophenol	860 U	920 U	1000 U	1200 U	930 U	1000 U	960 U	840 U	910 U
4-Nitrophenol	860 U	920 U	1000 U	1200 UJ	930 U	1000 U	960 U	840 U	910 U
Dibenzofuran	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
2,4-Dinitrotoluene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Diethylphthalate	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
4-Chlorophenyl-phenylether	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Fluorene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
4-Nitroaniline	860 U	920 U	1000 U	1200 U	930 U	1000 U	960 U	840 U	910 U
4,6-Dinitro-2-Methylphenol	860 U	920 U	1000 U	1200 U	930 U	1000 U	960 U	840 U	910 U
n-Nitrosodiphenylamine	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
4-Bromophenyl-phenylether	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Hexachlorobenzene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Pentachlorophenol	860 U	920 U	1000 U	1200 U	930 U	1000 U	960 U	840 U	910 U
Phenanthrene	110 J	180 J	400 J	480 U	120 J	320 J	400 U	350 U	140 J
Anthracene	350 U	380 U	420 U	480 U	380 U	200 J	400 U	350 U	370 U
Carbazole	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
di-n-Butylphthalate	350 UJB	380 UJB	420 UJB	480 U	380 UJB	430 UJB	400 U	350 U	370 U
Fluoranthene	190 J	250 J	600	480 U	100 J	1200	140 J	350 U	130 J
Pyrene	160 J	230 J	520	480 U	170 J	590	110 J	350 U	110 J
Butylbenzylphthalate	350 U	380 U	420 U	480 U	380 U	140 J	400 U	350 U	370 U
3,3'-Dichlorobenzidine	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Benzo(a)Anthracene	97 J	160 J	310 J	480 U	380 U	590	400 U	350 U	370 U
Chrysene	130 J	230 J	370 J	480 U	78 J	820	400 U	350 U	370 U
bis(2-Ethylhexyl)Phthalate	390	290 J	260 J	200 J	100 J	280 J	200 J	180 J	250 J
di-n-Octyl Phthalate	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Benzo(b)Fluoranthene	93 J	120 J	210 J	480 U	380 U	720	400 U	350 U	370 U
Benzo(k)Fluoranthene	95 J	120 J	220 J	480 UJ	380 UJ	360 J	400 UJ	350 UJ	370 UJ
Benzo(a)Pyrene	350 U	380 U	420 U	480 U	380 U	120 J	400 U	350 U	370 U
Indeno(1,2,3-cd)Pyrene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Dibenzo(a,h)Anthracene	350 U	380 U	420 U	480 U	380 U	92 J	400 U	350 U	370 U
Benzo(g,h,i)Perylene	350 U	380 U	420 U	480 U	380 U	430 U	400 U	350 U	370 U
Total Number of TICs*	23	23	21	14	8	15	22	19	19

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table.

ss-semiv

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds LoBue #2 Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS01		
Aldol condensation	3.02	450 J
Aldol condensation	3.28	150 J
Aldol condensation	3.60	160 J
Benzoic acid	5.47	120 JN
Unknown hydrocarbon	7.52	150 J
Pentadecane	7.83	100 JN
Unknown	8.42	100 J
Unknown hydrocarbon	9.07	100 J
Hexadecane	9.50	84 JN
Heptadecane, 2,6-dimethyl-	9.55	230 JN
Unknown	9.87	100 J
Unknown	10.12	81 J
Unknown	10.90	140 J
Unknown	11.65	170 J
Hexadecanoic acid	11.73	470 JN
Docosane	11.95	570 JN
Unknown hydrocarbon	13.25	170 J
Unknown	15.42	2400 J
Pentatriacontane	15.52	250 JN
Tetratriacontane	17.92	470 JN
Unknown	17.97	800 J
Hexatriacontane	19.00	3800 JN
Unknown	20.43	1800 J
Sample SS02		
Aldol condensation	3.03	690 J
Aldol condensation	3.28	180 J
Aldol condensation	3.58	180 J
Unknown hydrocarbon	7.02	120 J
Unknown	7.42	150 J
Unknown hydrocarbon	7.52	150 J
Unknown hydrocarbon	7.83	82 J
Benzenamine, 2-methyl-5-nitr	8.15	180 JN
Unknown	8.73	80 J
Unknown	9.52	120 J
Unknown hydrocarbon	9.57	140 J
Unknown	10.07	160 J
Unknown	10.90	140 J
Anthracene, 2-methyl-	11.40	86 JN
Unknown	11.67	290 J
Unknown	11.75	540 J
Unknown hydrocarbon	11.97	190 J
Phenanthrene, 3,6-dimethyl-	12.35	230 JN
Unknown	12.53	150 J

Semivolatile Organic Analysis for Soil Samples (Continued)		
Tentatively Identified Compounds		
LoBue #2		
Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS02 (Continued)		
Unknown carboxylic acid	15.47	680 J
Unknown	17.97	430 J
Unknown	20.12	2500 J
Unknown	20.42	1300 J
Sample SS02 Duplicate		
Aldol condensation	3.02	390 J
Pentadecane, 2,6,10,14-tetra	9.55	260 JN
Unknown	10.05	93 J
Unknown	10.90	110 J
Anthracene, 2-methyl-	11.40	110 JN
Phenanthrene, 4-methyl-	11.45	190 JN
Phenanthrene, 3-methyl-	11.67	400 JN
Unknown acid	11.73	550 J
Unknown hydrocarbon	11.97	410 J
Unknown PAH	12.35	320 J
Phenanthrene, 2,5-dimethyl-	12.50	450 JN
Unknown hydrocarbon	13.47	88 J
Unknown	14.88	1100 J
Unknown	15.08	460 J
Unknown	17.32	900 J
Pentatriacontane	17.90	370 JN
Pentadecane	18.98	1400 JN
Unknown	20.12	400 J
Unknown	20.42	830 J
Unknown	21.07	110 J
Unknown	21.17	1300 J
Sample SS03		
Aldol condensation	2.40	18000 J
Aldol condensation	3.82	780 J
Aldol condensation	4.02	240 J
Unknown	6.00	150 J
Dodecane, 2-methyl-8-propyl-	10.38	360 JN
Unknown	10.92	120 J
Unknown	12.55	130 J
Unknown Carboxylic acid	12.63	110 J
Unknown	14.77	100 J
Unknown	15.68	230 J
Unknown	16.97	270 J
Unknown	18.17	460 J
Unknown	18.73	370 J
Unknown	20.00	620 J
Sample SS04		
Aldol condensation	3.05	880 J
Aldol condensation	3.60	200 J

Semivolatile Organic Analysis for Soil Samples (Continued)		
Tentatively Identified Compounds		
LoBue #2		
Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS04 (Continued)		
Pentadecane, 2,6,10,14-tetra	9.55	320 JN
Anthracene, 1-methyl-	11.65	190 JN
Unknown	12.00	680 J
Unknown hydrocarbon	15.52	170 J
Unknown	19.53	530 J
Unknown	20.42	540 J
Sample SS05		
Aldol condensation	3.02	740 J
Aldol condensation	3.58	150 J
Naphthalene, 1-methyl-	6.38	96 JN
Unknown hydrocarbon	7.02	160 J
Naphthalene, 1,5-dimethyl-	7.37	190 JN
Unknown hydrocarbon	7.52	180 J
Unknown PAH	7.67	230 J
Unknown hydrocarbon	7.83	300 J
Naphthalene, 1,4,6-trimethyl	8.28	590 JN
Unknown PAH	8.60	110 J
Hexadecane	8.67	510 JN
Unknown hydrocarbon	9.08	290 J
Heptadecane	9.52	1200 JN
Octadecane	10.35	170 JN
Unknown hydrocarbon	12.57	4700 J
Sample SS06		
Aldol condensation	2.33	11000 J
Aldol condensation	3.82	500 J
Unknown	4.02	160 J
Unknown	4.23	98 J
Unknown	6.00	110 J
Unknown	11.42	150 J
Hexadecanoic acid	12.55	390 JN
Unknown	12.90	160 J
Unknown	13.93	210 J
Unknown	14.88	220 J
Unknown	15.52	270 J
Unknown	16.35	100 J
Unknown hydrocarbon	17.58	890 J
Unknown	18.43	270 J
Tetratetracontane	18.75	260 JN
Unknown	18.80	590 J
Tetratriacontane	19.83	900 JN
Heptacosane	20.87	170 JN
Unknown	21.05	1900 J
Unknown	21.18	760 J

Semivolatile Organic Analysis for Soil Samples (Continued)		
Tentatively Identified Compounds		
LoBue #2		
Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS06 (Continued)		
Unknown	21.43	480 J
Unknown	21.52	590 J
Sample SS08		
Aldol condensation	2.45	15000 J
Unknown	3.42	76 J
Aldol condensation	3.83	700 J
Unknown	4.02	160 J
Unknown	4.30	79 J
Unknown	5.12	100 J
Unknown	6.02	100 J
Unknown	6.70	74 J
Unknown PAH	8.15	86 J
Unknown hydrocarbon	9.47	110 J
Pentacosane	10.33	190 JN
Unknown	11.00	100 J
Unknown	11.73	240 J
Unknown PAH	12.35	140 J
Unknown	12.55	530 J
Unknown hydrocarbon	12.80	340 J
Unknown hydrocarbon	13.57	100 J
Unknown PAH	13.67	440 J
Unknown hydrocarbon	16.35	280 J
Sample SS09		
Aldol condensation	2.38	14000 J
Aldol condensation	3.40	110 J
Aldol condensation	3.82	650 J
Aldol condensation	4.02	200 J
Aldol condensation	4.22	100 J
Aldol condensation	4.30	100 J
Aldol condensation	5.13	140 J
Unknown	5.62	83 J
Unknown	6.72	120 J
Unknown	7.75	94 J
Unknown PAH	8.15	120 J
Unknown	8.27	77 J
Unknown hydrocarbon	9.47	81 J
Unknown hydrocarbon	10.38	84 J
Unknown	10.98	83 J
Unknown hydrocarbon	12.00	340 J
Unknown PAH	12.35	460 J
Unknown	12.55	1700 J
Unknown	13.93	290 J

ss-sv'ic

Pesticide/PCB Analysis for Soil Samples LoBue #2									
Pesticide/PCB	Sample Location and Number Concentrations in ug/kg								
	SS01 Bckgnd ESE71	SS02 ESE72	SS02 Dup. ESE73	SS03 ESE74	SS04 ESE75	SS05 ESE76	SS06 ESE77	SS08 ESE79	SS09 ESE80
Alpha-BHC	1.8 UJ	2.0 UJ	2.2 U	2.5 UJ	2.0 UJ	2.2 U	2.0 U	1.8 U	1.9 U
Beta-BHC	1.8 UJ	2.0 UJ	2.2 U	2.5 UJ	2.0 UJ	2.2 U	2.0 U	1.8 U	1.9 U
Delta-BHC	1.8 UJ	2.0 UJ	2.2 U	2.5 UJ	2.0 UJ	2.2 U	2.0 U	1.8 U	1.9 U
Gamma-BHC (Lindane)	1.8 UJ	2.0 UJ	2.2 U	2.5 UJ	2.0 UJ	2.2 U	2.0 U	1.8 U	1.9 U
Heptachlor	1.8 UJ	3.1 JP	2.2 U	2.5 UJ	2.0 UJ	2.2 U	2.0 U	1.8 U	1.9 U
Aldrin	1.8 UJ	2.0 UJ	2.2 U	2.5 UJ	2.0 UJ	2.2 U	2.0 U	1.8 U	1.9 U
Heptachlor Epoxide	1.8 UJ	3.0 JP	3.2 P	2.5 UJ	2.0 UJ	2.2 U	2.0 U	1.8 U	1.9 U
Endosulfan I	1.8 UJ	2.0 UJ	2.2 UJ	2.5 UJ	2.0 UJ	2.2 UJ	2.0 UJ	1.8 UJ	1.9 UJ
Dieldrin	3.5 UJ	71 JD	77 JD	4.8 UJ	6.8 JP	9.4 P	4.0 U	3.5 U	7.5
4,4'-DDE	7.6 JP	9.6 JP	8.4 P	4.8 UJ	5.6 JP	6.8 P	4.3	3.5 U	3.7 U
Endrin	14 J	3.8 UJ	4.2 U	4.8 UJ	17 JP	66	4.0 U	3.5 U	3.7 U
Endosulfan II	3.5 UJ	3.8 UJ	4.2 U	4.8 UJ	5.2 JP	4.3 U	4.0 U	3.5 U	3.7 U
4,4'-DDD	24 J	23 JP	4.2 U	4.8 UJ	10 JP	4.3 U	4.0 U	3.5 U	3.7 U
Endosulfan Sulfate	3.5 UJ	3.8 UJ	4.2 U	4.8 UJ	3.8 UJ	4.3 U	4.0 U	3.5 U	3.7 U
4,4'-DDT	29 JP	26 JP	26 P	4.8 UJ	11 JP	4.3 U	4.0 U	3.5 U	3.7 U
Methoxychlor	18 UJ	20 UJ	22 UJ	25 UJ	20 UJ	22 UJ	20 UJ	18 UJ	19 UJ
Endrin Ketone	3.5 UJ	3.8 UJ	4.2 U	4.8 UJ	3.8 UJ	4.3 U	4.0 U	3.5 U	3.7 U
Endrin Aldehyde	3.5 UJ	3.8 UJ	4.2 U	4.8 UJ	3.8 UJ	4.3 U	4.0 U	3.5 U	3.7 U
Alpha-Chlordane	2.0 JP	27 J	30	2.5 UJ	2.0 UJ	3.7 P	2.3 P	2.2 P	1.9 U
Gamma-Chlordane	2.5 JP	20 JP	20	2.5 UJ	3.3 JP	5.3 P	2.0 U	1.8 U	3.0 P
Toxaphene	180 UJ	200 UJ	220 U	250 UJ	200 UJ	220 U	200 U	180 U	190 U
Aroclor-1016	35 UJ	38 UJ	42 U	48 UJ	38 UJ	43 U	40 U	35 U	37 U
Aroclor-1221	72 UJ	77 UJ	86 U	97 UJ	78 UJ	87 U	81 U	71 U	76 U
Aroclor-1232	35 UJ	38 UJ	42 U	48 UJ	38 UJ	43 U	40 U	35 U	37 U
Aroclor-1242	35 UJ	38 UJ	42 U	48 UJ	38 UJ	43 U	40 U	35 U	37 U
Aroclor-1248	35 UJ	38 UJ	42 U	48 UJ	38 UJ	43 U	40 U	35 U	37 U
Aroclor-1254	35 UJ	38 UJ	42 U	48 UJ	38 UJ	43 U	40 U	35 U	37 U
Aroclor-1260	35 UJ	38 UJ	42 U	48 UJ	38 UJ	43 U	40 U	35 U	37 U

Inorganic Analysis for Soil Samples

LoBuc #2

Metals and Cyanide	Sample Location and Number								
	Concentrations in mg/kg								
	SS01 Backgnd. MEBV31	SS02 MEBV32	SS02 Dup. MEBV33	SS03 MEBV34	SS04 MEBV35	SS05 MEBV36	SS06 MEBV37	SS08 MEBV39	SS09 MEBV40
Aluminum	4860	7020	8470	3200	4010	3490	12800	1040	1800
Antimony	3.6 UJN	4.0 UJN	4.1 UJN	5.1 UJN	3.8 UJN	4.0 UJN	4.0 UJN	3.5 UJN	3.6 UJN
Arsenic	5.2	10.4	10.5	9.2	8.2	4.4	6.6	1.2 B	2.2
Barium	51.4	105	116	30.6 B	43.3 B	53.9	92.3	45.7	80.7
Beryllium	0.19 JB	0.98 B	1.3	1.2 B	0.50 JB	0.25 JB	0.69 JB	0.06 U	0.06 U
Cadmium	1.4	23.1	21.1	1.0 U	0.78 U	0.80 U	0.80 U	0.71 U	0.72 U
Calcium	25200 JE	47500 JE	97600 JE	2980 JE	18500 JE	37600 JE	23800 JE	3120 JE	10800 JE
Chromium	216 JE	80.0 JE	30.2 JE	7.7 JE	103 JE	255 JE	19.3 JE	70.8 JE	246 JE
Cobalt	23.0	19.1	9.6 B	2.8 B	30.0	23.5	9.9 B	44.7	39.2
Copper	67.4 J	70.0 J	167 J	38.1 J	43.8 J	47.9 J	20.4 J	15.9 J	32.6 J
Iron	41100 JE*	26500 JE*	13200 JE*	6210 JE*	23100 JE*	34800 JE*	19300 JE*	22400 JE*	35600 JE*
Lead	115 JN	675 JN	521 JN	13.6 JN	56.8 JN	58.1 JN	30.2 JN	43.4 JN	41.8 JN
Magnesium	33800 J	21300 J	49900 J	1130 JB	48100 J	49400 J	15200 J	74900 J	67700 J
Manganese	5890 JE	1720 JE	1330 JE	60.9 JE	3240 JE	5610 JE	362 JE	2180 JE	14400 JE
Mercury	0.31	0.11 U	0.13	0.15 U	0.11 U	0.12 U	0.12 U	0.11 U	0.11 U
Nickel	215 JE	91.1 JE	43.7 JE	18.1 JE	350 JE	272 JE	19.5 JE	564 JE	470 JE
Potassium	1120	1290	1140 B	707 B	336 B	285 B	1970	53.2 U	53.6 U
Selenium	0.13 U	1.3	1.5	0.64 B	0.27 JBW	0.16 JBW	0.63 JB	0.13 UJW	0.12 UJW
Silver	0.50 U	0.59 B	0.56 U	0.70 U	0.53 U	0.54 U	0.54 U	0.48 U	0.49 U
Sodium	149 UB	235 UB	275 UB	310 UB	187 UB	207 UB	161 UB	96.5 UB	173 B
Thallium	0.19 U	0.47 B	0.22 U	0.46 B	0.21 U	0.21 U	0.43 JBW	0.19 U	0.19 U
Vanadium	15.3	36.8	16.1	40.1	25.1	21.0	26.0	3.1 B	6.8 B
Zinc	344 JE	3040 JE	2310 JE	197 JE	92.3 JE	102 JE	84.9 JE	25.7 JE	35.3 JE
Cyanide	0.14 JNB	0.40 JNB	0.33 JNB	0.25 JNB	0.12 RUN	0.12 RUN	0.13 JNB	0.11 RUN	0.11 RUN

High Concentration Volatile Organic Analysis for Waste Samples LoBue #2						
Volatile Compound	Sample Location and Number Concentrations in mg/kg					
	WS01 8051E01-1	WS02 8051E01-2	WS02 Dup. 8051E01-3	WS03 8051E01-4	WS04 8051E01-5	WS05 8051E01-6
Chloromethane	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Vinyl Chloride	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	2.5 UJB	2.5 UJB	2.5 UJB	2.5 UJB	2.5 UJB	2.5 U
Acetone	5 UJB	5 UJB	5 UJB	6 UJB	6 UJB	2 J
Carbon Disulfide	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,1-Dichloroethene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,1-Dichloroethane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dichloroethene (total)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chloroform	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dichloroethane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-Butanone	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Carbon Tetrachloride	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Vinyl Acetate	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 U
Bromodichloromethane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dichloropropane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
cis-1,3-Dichloropropene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Trichloroethene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Dibromochloromethane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,1,2-Trichloroethane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
trans-1,3-Dichloropropene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Bromoform	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-Pentanone	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,1,2,2-Tetrachloroethane	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Toluene	2.5 U	1 J	4	2.5 U	2.5 U	2.5 U
Chlorobenzene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Ethylbenzene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Styrene	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Xylene (total)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Total Number of TICS *	0	0	0	0	0	1

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table.

ws-volat

High Concentration Volatile Organic Analysis for Waste Samples Tentatively Identified Compounds LoBue #2 Concentrations in mg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample WS05		
Unknown	2.174	2 J

wsbic-v

High Concentration Extractable Organic Analysis for Waste Samples						
LoBue #2						
Compound	Sample Location and Number /Concentrations in mg/kg					
	WS01 8051E01-1	WS02 8051E01-2	WS02 Dup. 8051E01-3	WS03 8051E01-4	WS04 8051E01-5	WS05 8051E01-6
Phenol	400 U	20 U	20 U	20 U	20 U	20 U
bis(2-Chloroethyl)ether	400 U	20 U	20 U	20 U	20 U	20 U
2-Chlorophenol	400 U	2 J	20 U	20 U	20 U	20 U
1,3-Dichlorobenzene	400 U	20 U	20 U	20 U	20 U	20 U
1,4-Dichlorobenzene	400 U	20 U	20 U	20 U	20 U	20 U
Benzyl alcohol	400 U	20 U	20 U	20 U	20 U	20 U
1,2-Dichlorobenzene	400 U	20 U	20 U	20 U	20 U	20 U
2-Methylphenol	400 U	20 U	20 U	20 U	20 U	20 U
bis(2-chloroisopropyl)ether	400 U	20 U	20 U	20 U	20 U	20 U
4-Methylphenol	400 U	20 U	20 U	20 U	20 U	20 U
n-Nitroso-di-n-propylamine	400 U	20 U	20 U	20 U	20 U	20 U
Hexachloroethane	400 U	20 U	20 U	20 U	20 U	20 U
Nitrobenzene	400 U	20 U	20 U	20 U	20 U	20 U
Isophorone	400 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	400 U	20 U	20 U	20 U	20 U	20 U
2,4-Dimethylphenol	400 U	20 U	20 U	20 U	20 U	20 U
Benzoic acid	2000 U	100 U	100 U	100 U	100 U	100 U
bis(2-Chloroethoxy)methane	400 U	20 U	20 U	20 U	20 U	20 U
2,4-Dichlorophenol	400 U	20 U	20 U	20 U	20 U	20 U
1,2,4-Trichlorobenzene	400 U	20 U	20 U	20 U	20 U	20 U
Naphthalene	400 U	20 U	20 U	20 U	20 U	20 U
4-Chloroaniline	400 U	20 U	20 U	20 U	20 U	20 U
Hexachlorobutadiene	400 U	20 U	20 U	20 U	20 U	20 U
4-Chloro-3-methylphenol	400 U	20 U	20 U	20 U	20 U	20 U
2-Methylnaphthalene	92 J	20 U	20 U	20 U	20 U	20 U
Hexachlorocyclopentadiene	400 U	20 U	20 U	20 U	20 U	20 U
2,4,6-Trichlorophenol	400 U	20 U	20 U	20 U	20 U	20 U
2,4,5-Trichlorophenol	2000 U	100 U	100 U	100 U	100 U	100 U
2-Chloronaphthalene	400 U	20 U	20 U	20 U	20 U	20 U
2-Nitroaniline	2000 U	100 U	100 U	100 U	100 U	100 U
Dimethylphthalate	400 U	20 U	20 U	20 U	20 U	20 U
Acenaphthylene	400 U	20 U	20 U	20 U	20 U	20 U
2,6-Dinitrotoluene	400 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	2000 U	100 U	100 U	100 U	100 U	100 U
Acenaphthene	400 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrophenol	2000 U	100 U	100 U	100 U	100 U	100 U
4-Nitrophenol	2000 U	100 U	100 U	100 U	100 U	100 U
Dibenzofuran	400 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	400 U	20 U	20 U	20 U	20 U	20 U
Diethylphthalate	400 U	20 U	20 U	20 U	20 U	20 U
4-Chlorophenyl-phenylether	400 U	20 U	20 U	20 U	20 U	20 U
Fluorene	32 J	20 U	20 U	20 U	20 U	20 U
4-Nitroaniline	2000 U	100 U	100 U	100 U	100 U	100 U
4,6-Dinitro-2-methylphenol	2000 U	100 U	100 U	100 U	100 U	100 U
n-Nitrosodiphenylamine	400 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl-phenylether	400 U	20 U	20 U	20 U	20 U	20 U
alpha-BHC	400 U	20 U	20 U	20 U	20 U	20 U
Hexachlorobenzene	400 U	20 U	20 U	20 U	20 U	20 U

High Concentration Extractable Organic Analysis for Waste Samples (Continued)						
LoBue #2						
Compound	Sample Location and Number /Concentrations in mg/kg					
	WS01 8051E01-1	WS02 8051E01-2	WS02 Dup. 8051E01-3	WS03 8051E01-4	WS04 8051E01-5	WS05 8051E01-6
beta-BHC	400 U	20 U	20 U	20 U	20 U	20 U
Pentachlorophenol	2000 U	100 U	100 U	100 U	100 U	100 U
gamma-BHC(Lindane)	400 U	20 UJ	20 UJ	20 U	20 UJ	20 U
Phenanthrene	2000	20 U	20 U	20 U	20 U	20 U
Anthracene	190 J	20 U	20 U	20 U	20 U	20 U
delta-BHC	400 U	20 U	20 U	20 U	20 U	20 U
Heptachlor	400 U	20 U	20 U	20 U	20 U	20 U
Aldrin	400 U	20 U	20 U	20 U	20 U	20 U
Di-n-Butylphthalate	400 U	20 U	20 U	20 U	20 U	20 U
Fluoranthene	290 J	20 U	20 U	20 U	20 U	20 U
Heptachlor Epoxide	400 U	20 U	20 U	20 U	20 U	20 U
Monochlorobiphenyl	2000 U	100 U	100 U	100 U	100 U	100 U
Dichlorobiphenyl	2000 U	100 U	100 U	100 U	100 U	100 U
Trichlorobiphenyl	2000 U	100 U	100 U	100 U	100 U	100 U
Tetrachlorobiphenyl	2000 U	100 U	100 U	100 U	100 U	100 U
Pyrene	2700	20 U	20 U	20 U	20 U	20 U
gamma Chlordane	400 U	20 U	20 U	20 U	20 U	20 U
Endosulfan I	400 U	20 U	20 U	20 U	20 U	20 U
alpha-Chlordane	400 U	20 U	20 U	20 U	20 U	20 U
Pentachlorobiphenyl	2000 U	100 U	100 U	100 U	100 U	100 U
4,4'-DDE	400 U	20 U	20 U	20 U	20 U	20 U
Dieldrin	400 U	20 U	20 U	20 U	20 U	20 U
Hexachlorobiphenyl	2000 U	100 U	100 U	100 U	100 U	100 U
Endrin	400 U	20 U	20 U	20 U	20 U	20 U
Endosulfan II	400 U	20 UJ	20 UJ	20 U	20 UJ	20 U
4,4'-DDD	400 U	20 U	20 U	20 U	20 U	20 U
Heptachlorobiphenyl	2000 U	100 U	100 U	100 U	100 U	100 U
Butylbenzylphthalate	400 U	20 U	20 U	20 U	20 U	20 U
Endosulfan sulfate	400 U	20 U	20 U	20 U	20 U	20 U
4,4'-DDT	400 U	20 U	20 U	20 U	20 U	20 U
Endrin ketone	400 U	20 U	20 U	20 U	20 U	20 U
Benzo(a)anthracene	1400	20 U	20 U	20 U	20 U	20 U
Methoxychlor	400 U	20 U	20 U	20 U	20 U	20 U
Chrysene	2300	20 U	20 U	20 U	20 U	20 U
Octachlorobiphenyl	8000 U	200 U	200 U	200 U	200 U	200 U
3,3'-Dichlorobenzidine	1600 U	40 U	40 U	40 U	40 U	40 U
bis(2-Ethylhexyl)phthalate	400 U	20 U	20 U	20 U	20 U	2 J
Nonachlorobiphenyl	2000 U	200 U	200 U	200 U	200 U	200 U
Decachlorobiphenyl	8000 U	200 U	200 U	200 U	200 U	200 U
Di-n-octyl phthalate	400 UJ	20 U	20 U	20 U	20 U	20 U
Benzo(b)fluoranthene	480 J	20 U	20 U	20 U	20 U	20 U
Benzo(k)fluoranthene	400 UJ	20 UJ	20 UJ	20 U	20 UJ	20 U
Benzo(a)pyrene	2000 J	20 U	20 U	20 U	20 U	20 U
Indeno(1,2,3-cd)pyrene	400 UJ	20 U	20 U	20 U	20 U	20 U
Dibenzo(a,h)anthracene	250 J	20 U	20 U	20 U	20 U	20 U
Benzo(g,h,i)perylene	560	20 U	20 U	20 U	20 U	20 U
Total Number of TICs *	22	2	3	1	3	3

* Number, not concentration, of tentatively identified compounds (TICs) is reported on this table. ws-sepes

Extractable Organic Analysis for Waste Samples		
Tentatively Identified Compounds		
LoBue #2		
Concentrations in mg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample WS01		
Phenanthrene, methyl	14.39	2000 J
Anthracene, methyl	14.45	1800 J
1H-Indene, -phenyl	14.66	600 J
Phenanthrene, dimethyl	15.35	1000 J
Phenanthrene, dimethyl	15.44	2000 J
Phenanthrene, dimethyl	15.60	1200 J
Phenanthrene, dimethyl	15.66	720 J
Phenanthrene, dimethyl	15.76	600 J
Phenanthrene, trimethyl	16.50	480 J
Phenanthrene, trimethyl	16.57	520 J
1111-Benzo[fluorene	17.07	440 J
Pyrene, methyl-	17.30	1500 J
Pyrene, methyl-	17.50	640 J
1111-Benzo[fluorene	17.56	520 J
Pyrene, dimethyl	18.19	840 J
Pyrene, dimethyl	18.34	520 J
Pyrene, dimethyl	18.40	680 J
Benzo[naptho[thiopene	19.15	520 J
Benz[anthracene, -methy	19.69	400 J
Benz[anthracene, -methy	19.80	1200 J
Triphenylene, methyl	19.87	520 J
Benz[phenanthrene, dim	20.54	2100 J
Sample WS02		
Unknown Amide	16.49	24 J
Unknown Amide	18.04	8 J
Sample WS02 Duplicate		
Unknown Hydrocarbon	9.97	10 J
Unknown Hydrocarbon	12.18	12 J
Unknown Amide	16.34	16 J
Sample WS03		
Unknown Hydrocarbon	12.18	22 J
Sample WS04		
Unknown Hydrocarbon	12.19	26 J
Unknown Amide	16.35	12 J
Unknown Amide	16.49	18 J
Sample WS05		
Unknown Hydrocarbon	12.19	8 J
Unknown Amide	16.35	14 J
Unknown Amide	16.49	18 J

tic-ws

High Concentration Pesticide/PCB Analysis for Waste Samples						
LoBue #2						
Pesticide / PCB	Sample Location and Number					
	Concentrations in mg/kg					
	WS01 8051E01-1	WS02 8051E01-2	WS02 Dup. 8051E01-3	WS03 8051E01-4	WS04 8051E01-5	WS05 8051E01-6
Dioxaphene	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ
Aroclor-1016	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Aroclor-1221	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Aroclor-1232	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Aroclor-1242	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Aroclor-1248	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Aroclor-1254	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Aroclor-1260	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ

ws-arocl

Inorganic Analysis for Waste Samples LoBue #2						
Metals and Cyanide	Sample Location and Number Concentrations in mg/kg					
	WS01 8051E02-1	WS02 8051E02-2	WS02 Dup. 8051E02-3	WS03 8051E02-4	WS04 8051E02-5	WS05 8051E02-6
Aluminum	26.1 JB	3920 J	2470 J	1580 J	212 J	10300 J
Antimony	2.3 UJN	5.1 JBN	5.2 JBN	6.4 JBN	3.2 JBN	13.8 JN
Arsenic	0.19 UJ*	39.3 J	28.3 J	2.9 UJ*+	0.73 UJB*	4.4 UJ*+
Barium	0.75 B	62.8	52.4	56.8	15.2 B	47.2
Beryllium	0.19 U	3.6	3.0	0.20 U	0.19 U	0.20 U
Cadmium	0.39 U	0.85 B	0.42 B	0.40 U	0.39 U	0.40 U
Calcium	329 UJBE*	1670 JE*	1490 UJE*	8460 JE*	300 UJBE*	155000 JE*
Chromium	1.5 JBE*	10.7 JE*	8.5 JE*	447 JE*	12.2 JE*	1460 JE*
Cobalt	0.58 UJE	13.9 JE	13.4 JE	44.9 JE	1.5 JBE	6.4 JBE
Copper	2.5 JBEN*	52.9 JEN*	47.1 JEN*	48.9 JEN*	11.1 JEN*	53.9 JEN*
Iron	104 JE	8130 JE	8030 JE	46000 JE	26400 JE	145000 JE
Lead	20.6	77.9 JN	51.2 JN	60.2 JN	3.6 S	47.8 JN
Magnesium	51.4 UB	427 UB	371 UB	91900 J	161 UB	35500 J
Manganese	2.2 JB*	21.2 J*	39.7 J*	5010 J*	333 J*	22300 J*
Mercury	0.08 U	0.25	0.21	0.08 B	0.06 U	0.07 U
Nickel	1.2 UJE	63.5 JE	61.0 JE	626 JE	5.1 JBE	47.7 JE
Potassium	105 U	856 B	484 B	132 B	105 U	249 B
Selenium	0.19 UJN	11.0 JN	9.1 JBNW	0.20 UJNW	0.20 UJNW	0.19 UJNW
Silver	0.58 U	0.59 U	0.60 U	0.60 U	0.58 U	4.0
Sodium	77.7 UB	203 UB	123 UB	97.1 UB	24.9 UJB	171 UB
Thallium	0.19 RUN	0.8 JBNW	0.70 JBN	0.20 UJNW	0.20 UJNW	0.19 UJNW
Vanadium	1.1 B	28.3	21.1	4.6 B	2.0 B	113
Zinc	4.5 JE*	144 JE*	142 JE*	104 JE*	23.5 JE*	76.0 JE*
Cyanide	0.12 UJN	0.12 UJN	0.12 UJN	0.12 UJN	0.12 UJN	0.12 UJN

ws-metal

Appendix D

LoBue #2

Site Photographs

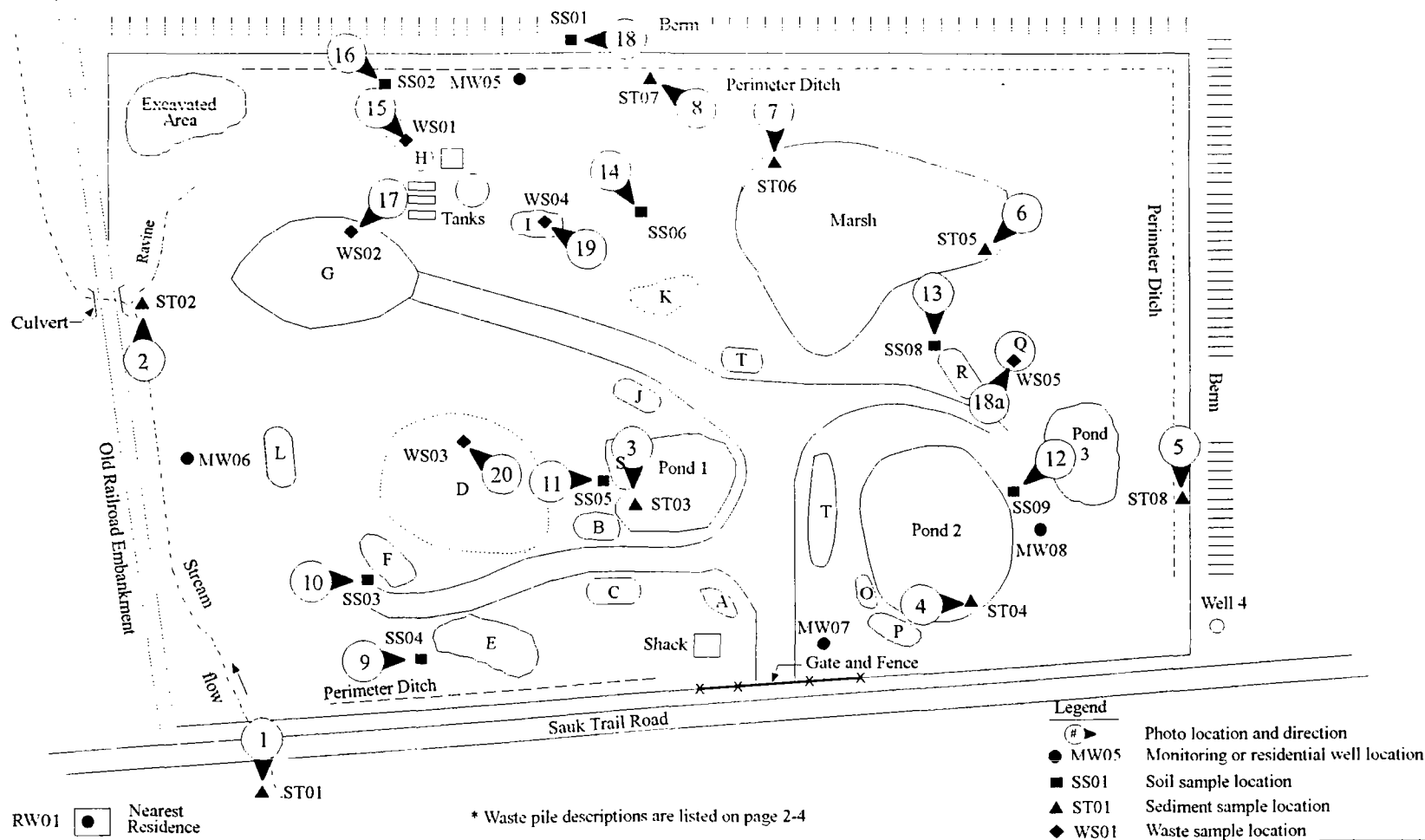
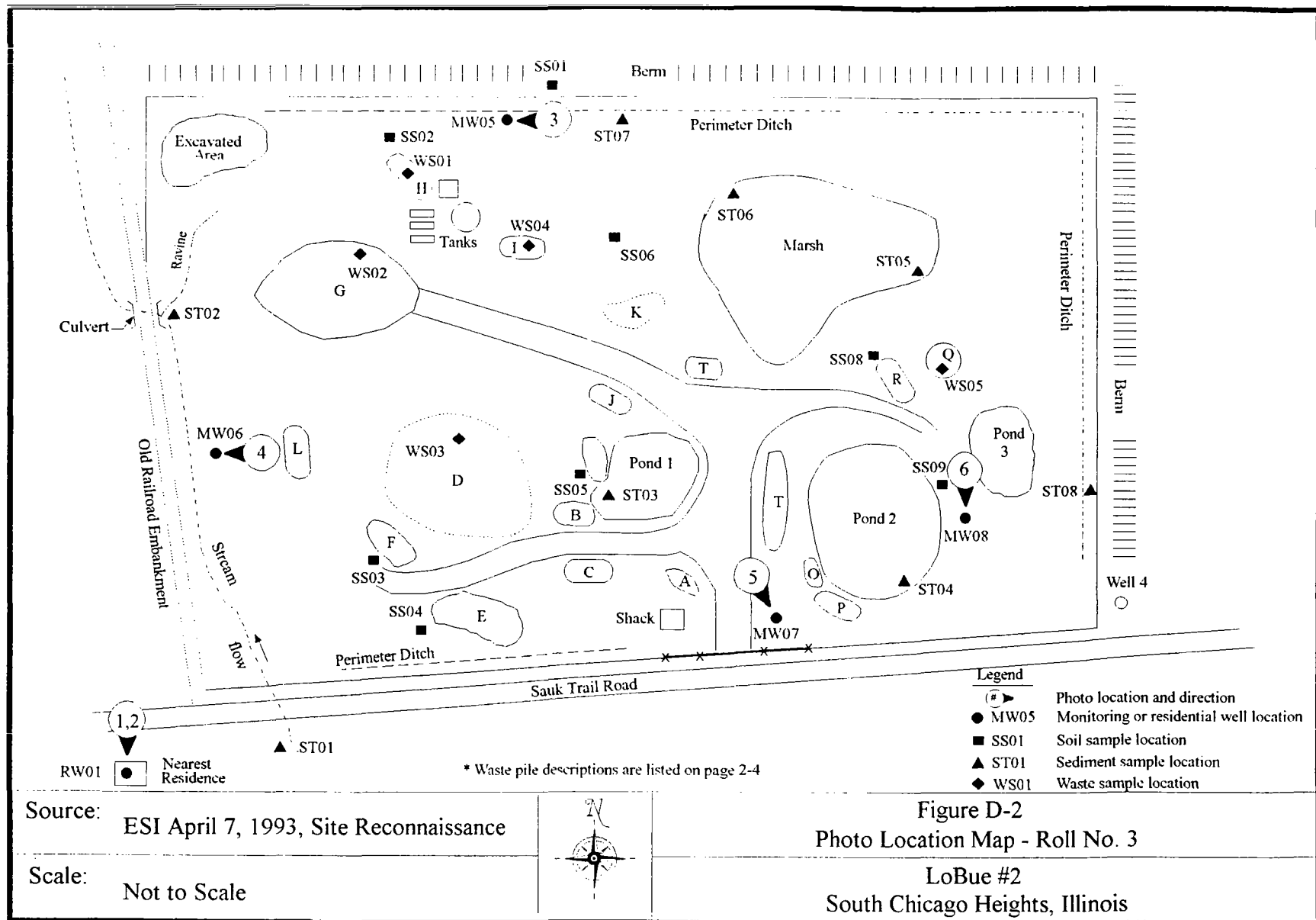


Figure D-1
Photo Location Map - Roll No. 2

LoBue #2
South Chicago Heights, Illinois



Date: 8/23/93

Time: 1030

Photo Taken By: M.A. Sanchez

Roll Number: 2

Photo Number: 1

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Sediment sample ST01
location marked by red flag. Collected
from the west bank of the unnamed
stream, upstream (southwest) of the
site.



Date: 8/23/93

Time: 1130

Photo Taken By: M.A. Sanchez

Roll Number: 2

Photo Number: 2

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: North

Description: Sediment sample ST02
location marked by red flag. Sample
collected from unnamed stream,
near a railroad culvert at the west
property line.



Date: 8/23/93

Time: 1330

Photo Taken By: M.A. Sanchez

Roll Number: 2

Photo Number: 3

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Sediment sample ST03
location marked by red flag. Sample
collected from southwest bank of pond
#1, in the central portion of the site,
near soil, slag, and debris waste piles.



Date: 8/23/93

Time: 1420

Photo Taken By: M.A. Sanchez

Roll Number: 2

Photo Number: 4

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: East

Description: Sediment sample ST04
location marked by red flag. Sample
collected from southern bank of pond
#2, in the southeast section of the site.
Exposed waste is visible along the
edge of the pond.



Date: 8/23/93

Time: 1515

Photo Taken By: M.A. Sanchez

Roll Number: 2

Photo Number: 5

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Sediment sample ST08
location marked by red flag. Sample
collected from the east bank of eastern
perimeter drainage ditch.



Date: 8/23/93

Time: 1610

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 6

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Southwest

Description: Sediment sample ST05
location. Sample collected from south-
eastern edge of marsh, just left of the
stump, in the northeast section of the
site. Standing water in marsh.



Date: 8/23/93

Time: 1652

Photo Taken By: M.A. Mastronardi

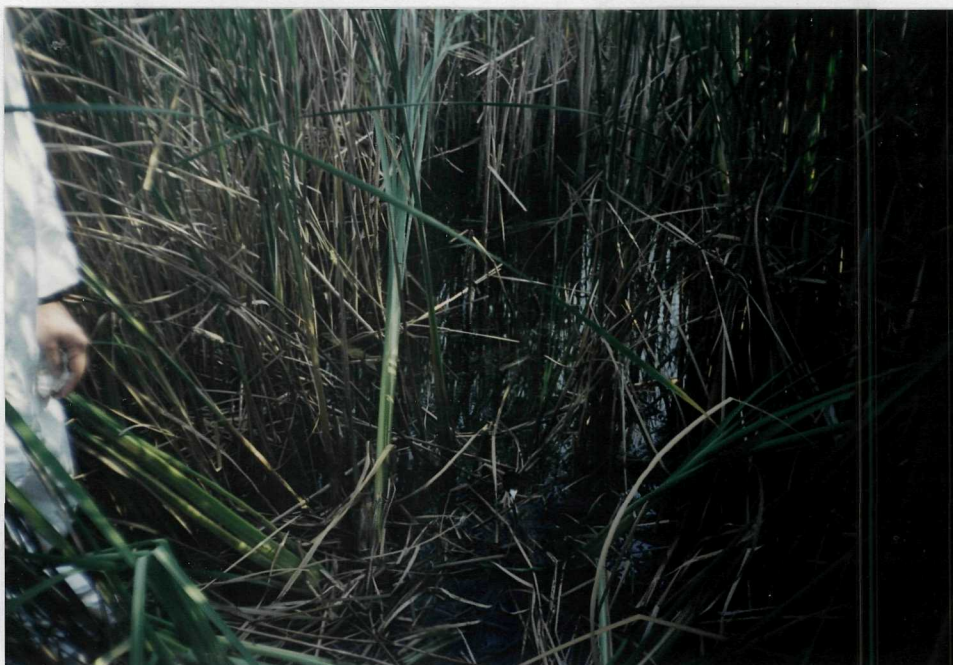
Roll Number: 2

Photo Number: 7

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Sediment sample ST06
location marked by upright sampling
spoon. Collected from northwestern
edge of the marsh, in the northeast
section of the site.



Date: 8/23/93

Time: 1703

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 8

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Northwest

Description: Sediment sample ST07
location marked by upright sampling
spoon. Sample collected near the
sediment/water interface from the
south bank of the northern perimeter
drainage ditch.



Date: 8/24/93

Time: 0920

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 9

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: East

Description: Soil sample SS04
location marked up upright sampling
spoon. Sample collected near the
southwest corner of site, adjacent to
the southwestern edge of waste pile E.



Date: 8/24/93

Time: 0956

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 10

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: East

Description: Soil sample SS03
location marked by upright sampling
spoon. Sample collected in the south-
west section of site, adjacent to the
western edge of waste pile F.



Date: 8/24/93

Time: 1015

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 11

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: East

Description: Soil sample SS05
location marked by sampling spoon.
Sample collected just west of pond
#1, adjacent to edge of waste pile S.



Date: 8/24/93

Time: 1115

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 12

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Southwest

Description: Soil sample SS09
location marked by sample containers.
Sample collected near east side of
pond #2, about 100 feet north of
Sauk Trail Road.



Date: 8/24/93

Time: 1205

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 13

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Soil sample SS08
location marked by upright sampling
spoon. Sample collected adjacent to
northwestern edge of waste pile R.



Date: 8/24/93

Time: 1235

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 14

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Southeast

Description: Soil sample SS06
location marked by upright sampling
spoon. Collected about 150 feet
south of the northern perimeter
ditch, north of scattered waste pile
K, in the north-central portion of
the site.



Date: 8/24/93

Time: 1435

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 15

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Southeast

Description: Soil sample WS01
location. Sample collected from
waste pile H (black tar-like waste),
northwest of tanks visible in the
background.



Date: 8/24/93

Time: 1502

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 16

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Southeast

Description: Soil sample SS02
location marked by upright sampling
spoon. Sample collected about 6
feet northwest (downgradient) of
waste pile H, in the northwest section
of the site.



Date: 8/24/93

Time: 1520

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 17

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Southwest

Description: Waste sample WS02
location marked by red flag. Sample
collected from waste pile G (black
ash waste) in the northwest section
of the site.



Date: 8/24/93

Time: 1550

Photo Taken By: M.A. Sanchez

Roll Number: 2

Photo Number: 18

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: West

Description: Soil sample SS01
location marked by sample containers
in plastic bag. Sample collected from
south side of berm along the northern
property line, about 50 feet south of
power lines, near center of the
property line.



Date: 8/24/93

Time: 1720

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 18a

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Northeast

Description: Waste sample WS05
location. Sample collected from waste
pile Q (grey slag with scrap metal and
concrete debris) in the eastern
section of the site.



Date: 8/24/93

Time: 1735

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 19

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Northwest

Description: Waste sample WS04
location. Sample collected from waste
pile I (foundry sand) in the northwest
section of the site.



Date: 8/24/93

Time: 1805

Photo Taken By: M.A. Mastronardi

Roll Number: 2

Photo Number: 20

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Northwest

Description: Waste sample WS03
location. Sample collected just left
of the large concrete chunk, from
graded waste pile D in the southwest
section of the site.



Date: 12/08/93

Time: 1230

Photo Taken By: M.A. Sanchez

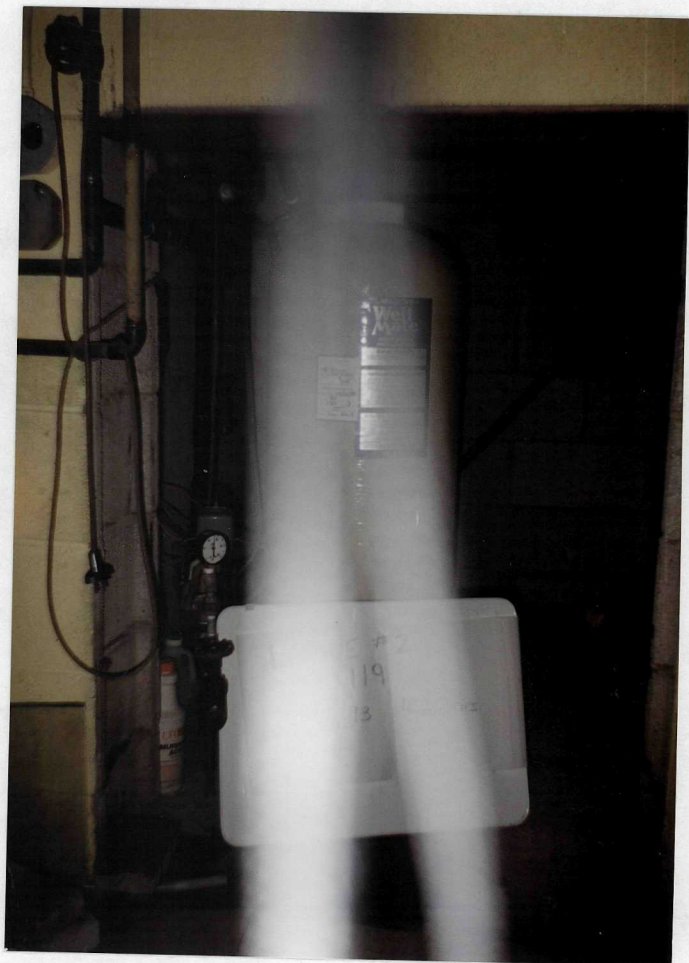
Roll Number: 3

Photo Number: 1

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Residential well sample
RW01 location. Sample collected from
residential well southwest of the site.
The well is behind the pressure tank
and associated piping shown.



Date: 12/08/93

Time: 1230

Photo Taken By: M.A. Sanchez

Roll Number: 3

Photo Number: 2

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Close-up view of
labels on the water system pressure
tank for residential well RW01.



Date: 12/08/93

Time: 1310

Photo Taken By: M.A. Sanchez

Roll Number: 3

Photo Number: 3

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: West

Description: Monitoring well
MW05 location in the northern
perimeter drainage ditch,
north-central portion of the site.



Date: 12/08/93

Time: 1315

Photo Taken By: M.A. Sanchez

Roll Number: 3

Photo Number: 4

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: West

Description: Monitoring well
MW06 location, near the west
property line.



Date: 12/08/93

Time: 1320

Photo Taken By: M.A. Sanchez

Roll Number: 3

Photo Number: 5

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: Southeast

Description: Monitoring well
MW07 location, near the southern
property line, northeast of the
entrance gate.



Date: 12/08/93

Time: 1328

Photo Taken By: M.A. Sanchez

Roll Number: 3

Photo Number: 6

Location/ILD #: LoBue #2,
South Chicago Heights, IL
ILD 980 902 050

Direction of Photo: South

Description: Monitoring well
MW08 location in the southeast
section of the site.



Appendix E

LoBue #2

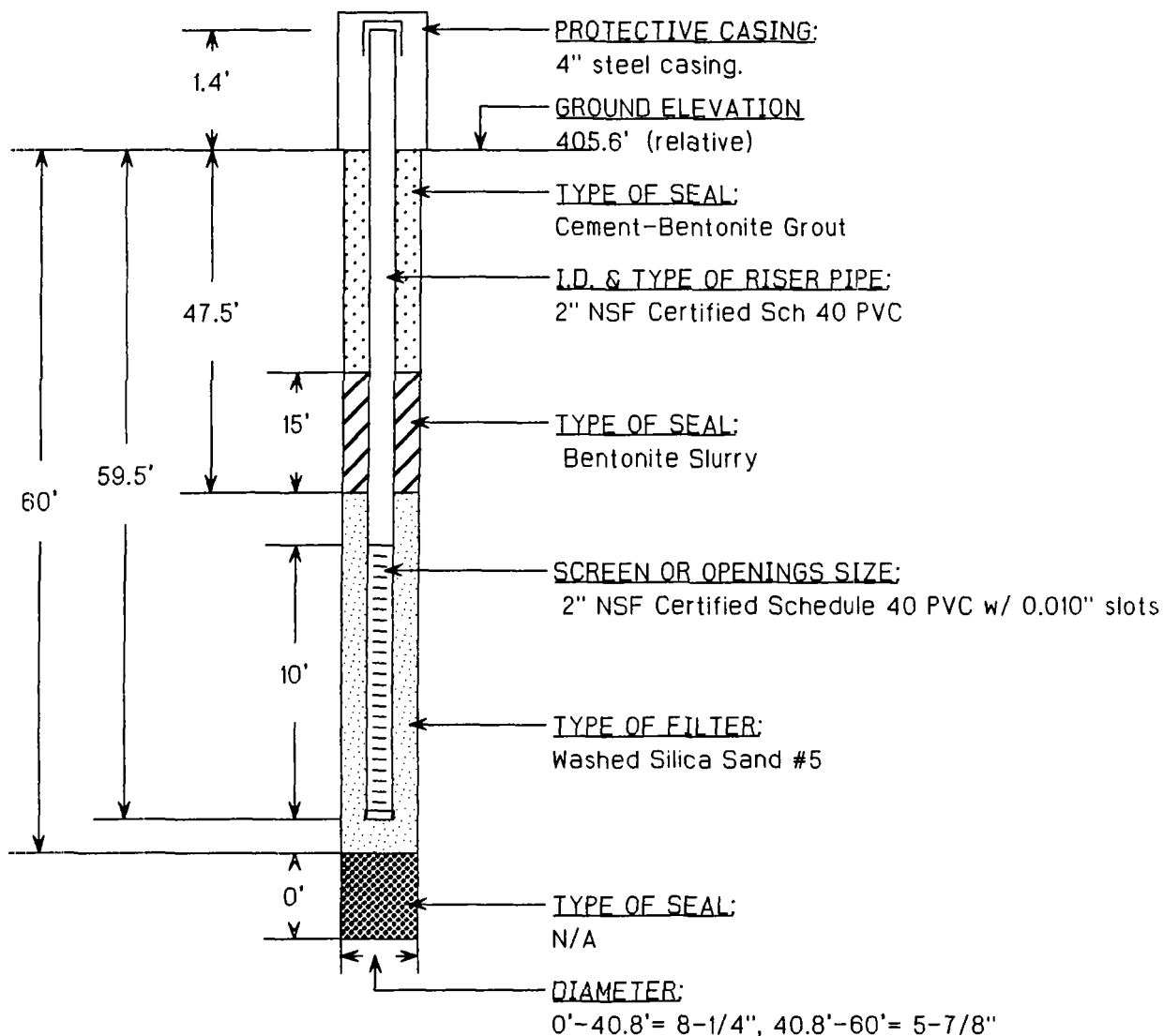
Boring and Well Installation Logs

BLACK & VEATCH Waste Science, Inc.

WELL INSTALLATION LOG

NO. MW05

CLIENT LSEPA		PROJECT LoBue #2	PROJECT NO. 71280.119
PROJECT LOCATION South Chicago Heights, Illinois	COORDINATES N E	TOP OF RISER ELEVATION (DATUM) 407.0' (relative)	DATE 11/9/93
STRATUM MONITORED Colomite Bedrock		LOGGED BY R. Sutera	
CHECKED BY R. Sutera		APPROVED BY J. Chitwood	



METHOD OF INSTALLATION:

Boring drilled to completion. Set riser pipe and screen. Placed filter and seal. Grouted to 2' below ground surface. Set above ground protective steel casing. Concrete surface seal placed 4" above ground surface.

REMARKS:

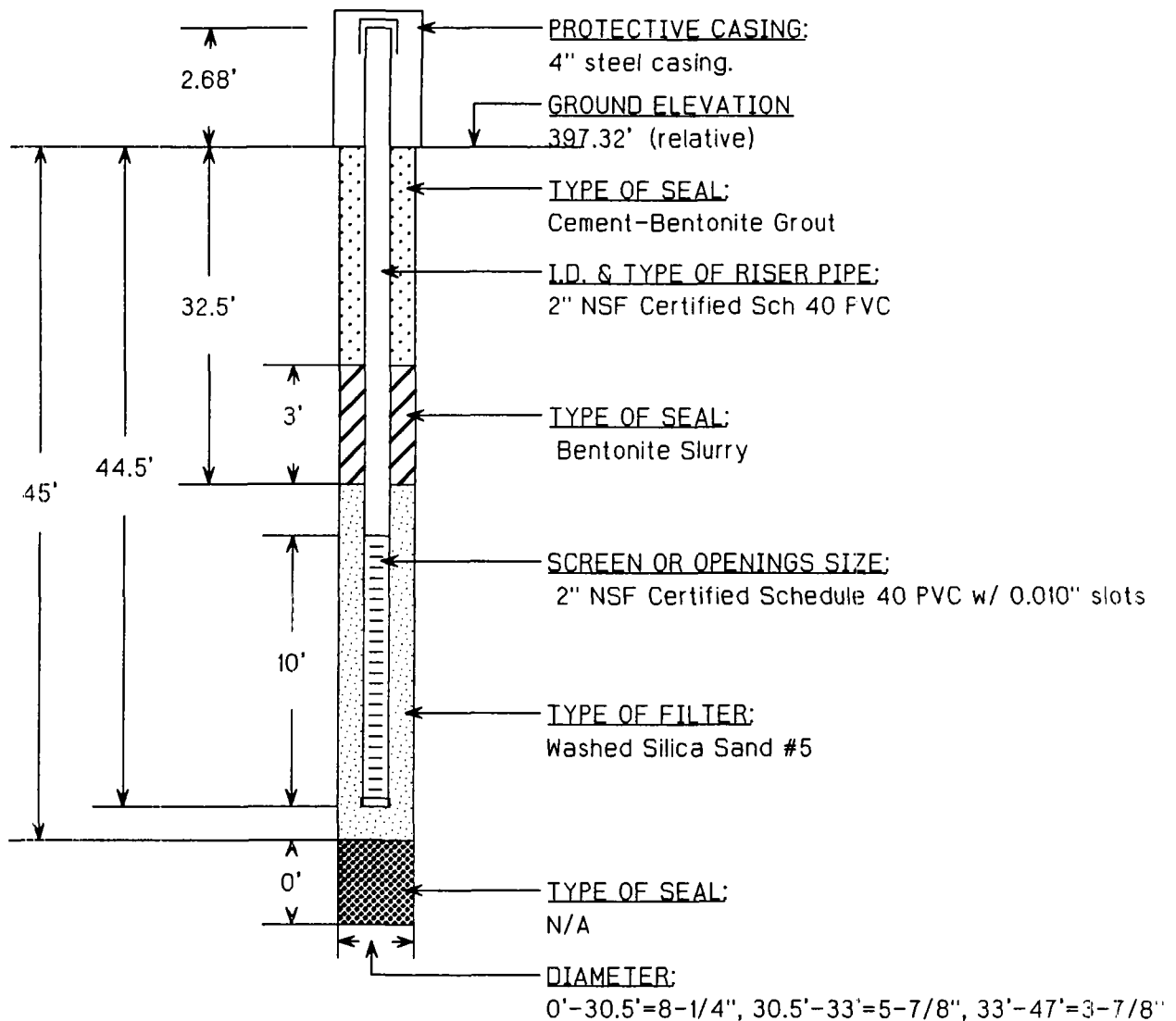
Well developed by pumping 300 gallons of water.

BLACK & VEATCH Waste Science, Inc.

WELL INSTALLATION LOG

NO. MW08

CLIENT USEPA		PROJECT LoBue #2	PROJECT NO. 71280.119
PROJECT LOCATION South Chicago Heights, Illinois	COORDINATES N E	TOP OF RISER ELEVATION (DATUM) 400.0' (relative)	DATE 12/3/93
STRATUM MONITORED Dolomite Bedrock		LOGGED BY J. Noyes	
CHECKED BY R. Sutera		APPROVED BY J. Chitwood	



METHOD OF INSTALLATION:

Boring drilled to completion. Set riser pipe and screen. Placed filter and seal. Grouted to 2' below ground surface. Set above ground protective steel casing. Concrete surface seal placed 4" above ground surface.

REMARKS:

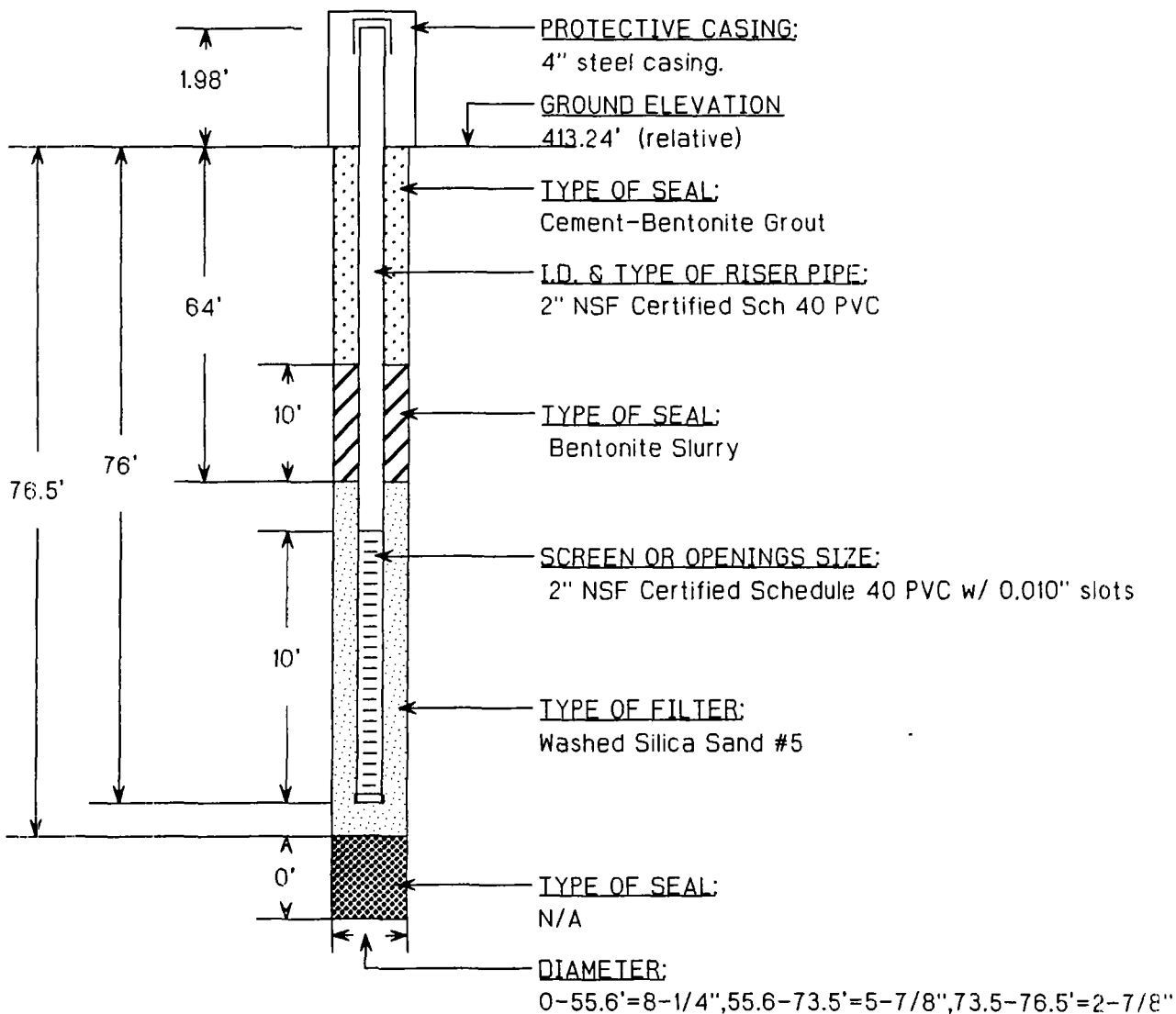
Well pumped dry three times during development.

BLACK & VEATCH Waste Science, Inc.

WELL INSTALLATION LOG

NO. MW07

CLIENT USEPA		PROJECT LoBue #2	PROJECT NO. 71280.119
PROJECT LOCATION South Chicago Heights, Illinois	COORDINATES N E	TOP OF RISER ELEVATION (DATUM) 415.22' (relative)	DATE 11/17/93
STRATUM MONITORED Dolomite Bedrock		LOGGED BY J. Noyes	
CHECKED BY R. Sutura		APPROVED BY J. Chitwood	



METHOD OF INSTALLATION:

Boring drilled to completion. Set riser pipe and screen. Placed filter and seal. Grouted to 2' below ground surface. Set above ground protective steel casing. Concrete surface seal placed 4" above ground surface.

REMARKS:

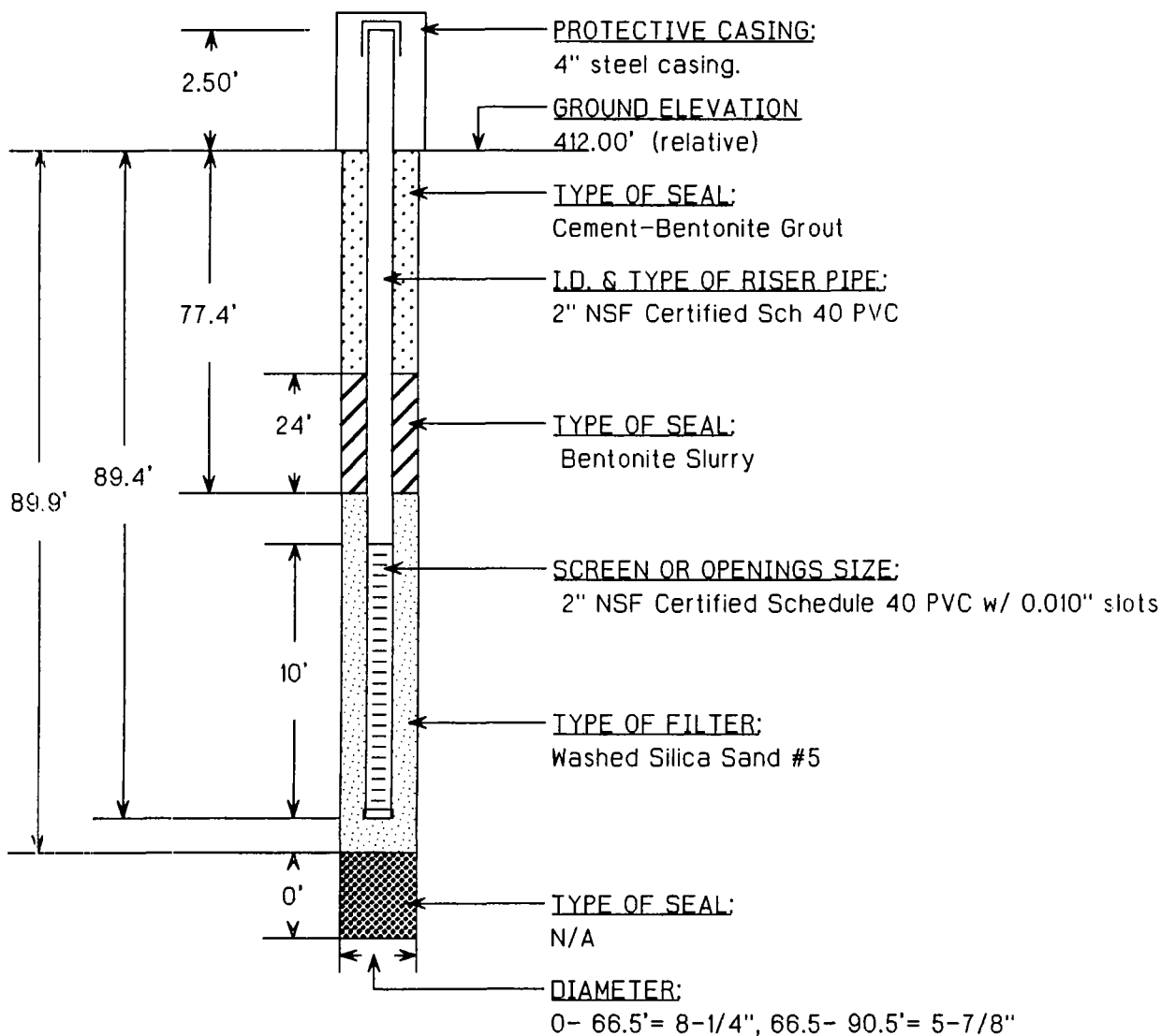
Well purged dry three times during development.

BLACK & VEATCH Waste Science, Inc.

NO. MW08

WELL INSTALLATION LOG

CLIENT USEPA		PROJECT LoBue #2	PROJECT NO. 71280.119
PROJECT LOCATION South Chicago Heights, Illinois	COORDINATES N E	TOP OF RISER ELEVATION (DATUM) 414.50' (relative)	DATE 11/23/93
STRATUM MONITORED Doomite Bedrock		LOGGED BY J. Noyes	
CHECKED BY R. Sutera		APPROVED BY J. Chitwood	



METHOD OF INSTALLATION:

Boring drilled to completion. Set riser pipe and screen. Placed filter and seal. Grouted to 2' below ground surface. Set above ground protective steel casing. Concrete surface seal placed 4" above ground surface.

REMARKS:

Developed by pumping until clear. Twenty eight gallons pumped during development.

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW05
SHEET 1 OF 2

CLIENT USEPA					PROJECT LoBue #2					PROJECT NO. 71280.119																															
PROJECT LOCATION South Chicago Heights, Illinois					COORDINATES N ' E '					ELEVATION (DATUM) 405.6' (relative)					TOTAL DEPTH 60 FEET					DATE START 11/02/93																					
SURFACE CONDITIONS Drainage ditch, draining to the west, moist										LOGGED BY R. Sutera										DATE FINISH 11/09/93																					
SAMPLING										CHECKED BY R. Sutera										APPROVED BY J. Chitwood																					
SAMPLE TYPE		SAMPLE NUMBER		SET		6 INCHES		2ND 6 INCHES		3RD 6 INCHES		N VALUE		SAMPLE RECOVERY		DEPTH IN FEET		SAMPLE TYPE		GRAPHIC LOG		CLASSIFICATION OF MATERIAL										REMARKS									
CORE SIZE		RUN NUMBER		RUN LENGTH		RUN RECOVERY		RQD RECOVERY		PERCENT RECOVERY		RQD																													
SPT		1		4		9		11		20		1.8'										CLAY; brown; very stiff; high plasticity; moist. (GLACIAL TILL)										Boring advanced w/8-1/4" OD, 4-1/4" ID hollow stem auger.									
																						grading dry; trace gravel.										SPT sampler driven w/140 lb. hammer.									
SPT		2		4		8		9		17		1.9'																													
SPT		3		4		7		11		18		2.0'																													
SPT		4		5		9		12		21		2.0'																													
SPT		5		11		25		33		58		1.2'										trace silt grades in;																			

BORING NO. MW05
SHEET 2 OF 2

CLIENT USEPA					PROJECT LoBue #2					PROJECT NO. 71280.119																													
PROJECT LOCATION South Chicago Heights, Illinois					COORDINATES N E					ELEVATION (DATUM) 405.6' ((relative))					TOTAL DEPTH 60 FEET					DATE START 11/02/93																			
SURFACE CONDITIONS Drainage ditch, draining to the west, moist										LOGGED BY R. Sutera										DATE FINISH 11/09/93																			
SAMPLING															CHECKED BY R. Sutera										APPROVED BY J. Chitwood														
SAMPLE TYPE		SAMPLE NUMBER		SET 8 INCHES		2ND 8 INCHES		3RD 8 INCHES		N VALUE		SAMPLE RECOVERY		DEPTH IN FEET		SAMPLE TYPE		GRAPHIC LOG		CLASSIFICATION OF MATERIAL										REMARKS									
CORE SIZE		RUN NUMBER		RUN LENGTH		RUN RECOVERY		RQD RECOVERY		PERCENT RECOVERY		RQD																											
CORING																																							
SPT		6		5		12		33		45		2.0'		31		SAMPLE TYPE		GRAPHIC LOG		some gravel grades in.										Below 40.8' boring continued w/ NX double core barrel w/ diamond bit using mud as drilling fluid, and borehole reamed w/ 5-7/8" OD tricone bit to 60', using potable water as drilling fluid.									
SPT		7		8		10		22		32		1.6'		32		SAMPLE TYPE		GRAPHIC LOG																					
SPT		8		18		50/3"		-		-		0.8'		33		SAMPLE TYPE		GRAPHIC LOG																					
1-7/8"		1		3.8'		2.7'		2.7'		71		71		34		SAMPLE TYPE		GRAPHIC LOG																					
1-7/8"		2		4.5'		4'		4'		89		89		35		SAMPLE TYPE		GRAPHIC LOG																					
1-7/8"		3		5.0'		4.8'		4.8'		96		96		36		SAMPLE TYPE		GRAPHIC LOG																					
1-7/8"		4		5.0'		5.0'		5.0'		100		100		37		SAMPLE TYPE		GRAPHIC LOG																					
														38		SAMPLE TYPE		GRAPHIC LOG																					
														39		SAMPLE TYPE		GRAPHIC LOG																					
														40		SAMPLE TYPE		GRAPHIC LOG																					
														41		SAMPLE TYPE		GRAPHIC LOG																					
														42		SAMPLE TYPE		GRAPHIC LOG																					
														43		SAMPLE TYPE		GRAPHIC LOG																					
														44		SAMPLE TYPE		GRAPHIC LOG																					
														45		SAMPLE TYPE		GRAPHIC LOG																					
														46		SAMPLE TYPE		GRAPHIC LOG																					
														47		SAMPLE TYPE		GRAPHIC LOG																					
														48		SAMPLE TYPE		GRAPHIC LOG																					
														49		SAMPLE TYPE		GRAPHIC LOG																					
														50		SAMPLE TYPE		GRAPHIC LOG																					
														51		SAMPLE TYPE		GRAPHIC LOG																					
														52		SAMPLE TYPE		GRAPHIC LOG																					
														53		SAMPLE TYPE		GRAPHIC LOG																					
														54		SAMPLE TYPE		GRAPHIC LOG																					
														55		SAMPLE TYPE		GRAPHIC LOG																					
														56		SAMPLE TYPE		GRAPHIC LOG																					
														57		SAMPLE TYPE		GRAPHIC LOG																					
														58		SAMPLE TYPE		GRAPHIC LOG																					
														59		SAMPLE TYPE		GRAPHIC LOG																					

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW06

SHEET 1 OF 2

CLIENT USEPA										PROJECT LoBue #2										PROJECT NO. 71280.119																																							
PROJECT LOCATION South Chicago Heights, Illinois										COORDINATES N ' E '										ELEVATION (DATUM) 397.32' ((relative))										TOTAL DEPTH 45 FEET										DATE START 10/28/93																			
SURFACE CONDITIONS Slight slope to southwest, moist																				LOGGED BY J. Noyes																				DATE FINISH 12/03/93																			
SAMPLING															CHECKED BY R. Sutera															APPROVED BY J. Chitwood																													
SAMPLE TYPE		SAMPLE NUMBER		SET 8 INCHES		2ND 8 INCHES		3RD 8 INCHES		N VALUE		SAMPLE RECOVERY		DEPTH IN FEET		SAMPLE TYPE		GRAPHIC LOG		CLASSIFICATION OF MATERIAL																				REMARKS																			
CORE SIZE		RUN NUMBER		RUN LENGTH		RUN RECOVERY		ROD RECOVERY		PERCENT RECOVERY		ROD																																															
SPT		1		3		6		12		18		0.5'		1						Silty CLAY; dark brown; soft; high plasticity; moist; trace bricks & roots. (FILL)																				Boring advanced w/8-1/4" OD, 4-1/4" ID hollow stem auger. SPT sampler driven w/140 lb. hammer.																			
																				grading brown																																							
SPT		2		2		2		4		6		1.7'		11						grading light brown w/ some gray; iron staining grades in.																				Water encountered @ 15' during drilling.																			
																				Gravelly clay; brown; very stiff; low plasticity; wet; trace sand & silt. (GLACIAL TILL)																																							
SPT		3		6		9		13		22		1.0'		12																																													
SPT		4		23		35		50		-		0.9'		13																																													

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW06
SHEET 2 OF 2

CLIENT USEPA					PROJECT LoBue #2					PROJECT NO. 71280.119																			
PROJECT LOCATION South Chicago Heights, Illinois					COORDINATES N ' E '					ELEVATION (DATUM) 397.32' (relative)					TOTAL DEPTH 45 FEET					DATE START 10/28/93									
SURFACE CONDITIONS Slight slope to southwest, moist										LOGGED BY J. Noyes										DATE FINISH 12/03/93									
SAMPLING										CHECKED BY R. Sutera										APPROVED BY J. Chitwood									
SAMPLE TYPE	SAMPLE NUMBER	SET 8 INCHES	2ND 8 INCHES	3RD 8 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH IN FEET	SAMPLE TYPE	GRAPHIC LOG	CLASSIFICATION OF MATERIAL	REMARKS																		
CORING																													
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD																							
SPT	5	16	50	-	-	0.4'	31			grading dark gray; w/ some sand.	From 30.3' to 33', boring was advanced w/ 5-7/8" tricone bit using bentonite mud as drilling fluid.																		
1-7/8"	1	0.5'	0.5'	0	100	0	32			DOLOMITE; gray; some tar in vugs; fine grained to crystalline; 1/2" gray chert nodules; occasional fossils; slightly weathered.																			
1-7/8"	2	1.5'	1.5'	0	100	0	33				Below 33' boring continued w/ 2-7/8" NX double core barrel w/ diamond bit using potable water as drilling fluid, and reamed w/ 3-7/8" OD tricone bit using potable water as drilling fluid.																		
1-7/8"	3	2.5'	2.5'	0	100	0	34			90' fracture from 33.5' to 37'; some tar along fracture.																			
							35																						
							36			60' fracture @ 36'.																			
							37																						
							38																						
							39																						
1-7/8"	4	7.5'	7.5'	4.7'	100	63	40																						
							41																						
							42																						
							43																						
							44																						
			45'				45																						
							46				Bottom of boring @ 45'.																		
							47				Water level recorded @ 33.2' @ completion of drilling on 12/3/93.																		
							48				Monitoring well installed on 12/3/93.																		
							49																						
							50																						
							51																						
							52																						
							53																						
							54																						
							55																						
							56																						
							57																						
							58																						
							59																						

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW07
SHEET 1 OF 3

CLIENT USEPA										PROJECT LoBue #2										PROJECT NO. 71280.119																																							
PROJECT LOCATION South Chicago Heights, Illinois										COORDINATES N ' E '										ELEVATION (DATUM) 413.24' ((relative))										TOTAL DEPTH 76.5 FEET										DATE START 10/21/93																			
SURFACE CONDITIONS Flat, grassy, next to dirt road										LOGGED BY J. Noyes										DATE FINISH 11/17/93																																							
SAMPLING										CHECKED BY R. Sutera										APPROVED BY J. Chitwood																																							
SAMPLE TYPE		SAMPLE NUMBER		SET 6 INCHES		2ND 6 INCHES		3RD 6 INCHES		N VALUE		SAMPLE RECOVERY		DEPTH IN FEET		SAMPLE TYPE		GRAPHIC LOG		CLASSIFICATION OF MATERIAL																				REMARKS																			
CORE SIZE		RUN NUMBER		RUN LENGTH		RUN RECOVERY		ROD RECOVERY		PERCENT RECOVERY		ROD																																															
SPT		1		5		10		15		25		1.5'		1						Silty CLAY; brown; very stiff; low plasticity; moist; w/ some gravel. (FILL)																				Boring advanced w/8-1/4" OD, 4-1/4" ID hollow stem auger. SPT sampler driven w/140 lb. hammer.																			
SPT		2		5		16		16		32		1.9'		2																																													
SPT		3		2		6		10		16		1.7'		3																																													
SPT		4		4		7		11		18		2.0'		4						CLAY; gray; very stiff; high plasticity; moist; w/ some gravel. (GLACIAL TILL)																																							

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW07
SHEET 2 OF 3

CLIENT USEPA										PROJECT LoBue #2										PROJECT NO. 71280.119																													
PROJECT LOCATION South Chicago Heights, Illinois										COORDINATES N ' E '										ELEVATION (DATUM) 413.24' (relative)										TOTAL DEPTH 76.5 FEET										DATE START 10/21/93									
SURFACE CONDITIONS Flat, grassy, next to dirt road										LOGGED BY J. Noyes										DATE FINISH 11/17/93																													
SAMPLING															CHECKED BY R. Sutera															APPROVED BY J. Chitwood																			
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH IN FEET	SAMPLE TYPE	GRAPHIC LOG	CLASSIFICATION OF MATERIAL															REMARKS																								
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	ROD																																											
CORING																																																	
SP	5	3	5	8	13	2.0'	31			grading stiff.																																							
							32																																										
							33																																										
							34																																										
							35																																										
SPT	6	5	9	14	23	1.8'	36			grading very stiff.																																							
							37																																										
							38																																										
							39																																										
							40																																										
SPT	7	7	14	11	25	2.0'	41			Silty SAND; grayish-brown; medium dense; poorly graded; fine grained; wet; w/ some gravel.																																							
							42																																										
							43																																										
							44																																										
							45																																										
SPT	8	7	5	6	11	1.2'	46			SILT; grayish-brown; medium dense; non-plastic; wet.																																							
							47																																										
							48																																										
							49																																										
							50			Silty SAND; grayish-brown; medium dense; poorly graded; fine grained; wet; w/ some gravel.																																							
SPT	9	7	12	16	28	1.2'	51																																										
							52																																										
							53																																										
							54																																										
SPT	10	20	50/2"	-	-	0.5'	55																																										
			55.6'				56																																										
							57			DOLOMITE; gray; some tar in vugs; crystalline; 1/2" - 3" gray chert nodules; occasional fossils; occasional pyrite; slightly weathered.															Below 55.6' boring continued w/ 2-7/8" NX double core barrel w/ diamond bit using potable water as drilling fluid, and reamed w/ 5-7/8" OD tricone bit to 73.5' using potable water as drilling fluid.																								
1-7/8"	1	10'	7'	7'	70	70	58																																										
							59																																										

LOG OF BORING

CLIENT USEPA				PROJECT LoBue #2				PROJECT NO. 71280.119							
PROJECT LOCATION South Chicago Heights, Illinois				COORDINATES N ' E '				ELEVATION (DATUM) 413.24' ((relative))		TOTAL DEPTH 76.5 FEET		DATE START 10/21/93			
SURFACE CONDITIONS Flat, grassy, next to dirt road								LOGGED BY J. Noyes				DATE FINISH 11/17/93			
SAMPLING							CHECKED BY R. Sutera				APPROVED BY J. Chitwood				
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH IN FEET	SAMPLE TYPE	GRAPHIC LOG	CLASSIFICATION OF MATERIAL				REMARKS	
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD									
			65.5'				61								
							62								
							63								
							64								
							65								
1-7/8"	2	8'	8'	8'	100	100	66								
							67								
							68								
							69								
							70								
							71								
							72								
							73								
			73.5'				74								
1-7/8"	3	3'	3'	3'	100	100	75								
							76								
			76.5'				77							Bottom of boring @ 76.5'.	
							78							Water level recorded @ 62' @ completion of drilling on 11/17/93.	
							79							Monitoring well installed on 11/17/93.	
							80								
							81								
							82								
							83								
							84								
							85								
							86								
							87								
							88								
							89								

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW08
SHEET 1 OF 4

CLIENT USEPA										PROJECT LoBue #2										PROJECT NO. 71280.119																													
PROJECT LOCATION South Chicago Heights, Illinois										COORDINATES N ' E '										ELEVATION (DATUM) 412.0' ((relative))										TOTAL DEPTH 90.5 FEET										DATE START 10/26/93									
SURFACE CONDITIONS Flat, wet, covered with reeds.										LOGGED BY R. Sutera										DATE FINISH 11/23/93																													
SAMPLING										CHECKED BY R. Sutera										APPROVED BY J. Chitwood																													
SAMPLE TYPE	SAMPLE NUMBER	SET	1ST 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N	VALUE	SAMPLE RECOVERY	DEPTH IN FEET	SAMPLE TYPE	GRAPHIC LOG	CLASSIFICATION OF MATERIAL										REMARKS																											
CORE SIZE	R/N	NUMBER	R/N	LENGTH	R/N	RECOVERY	R/N	RECOVERY	PERCENT RECOVERY	R/N																																							
CORING																																																	
SPT	1	7	8	11	19	0.7'						SILT; black; soft; wet; w/ some brick, wood, concrete, & steel rubble. (FILL)										Boring advanced w/8-1/4" OD, 4-1/4" ID hollow stem auger. SPT sampler driven w/140 lb. hammer. Water encountered @ ground surface during drilling.																											
												grading very stiff.																																					
SPT	2	15	10	9	19	0.8'						SILTY CLAY; brownish-gray; very stiff; low plasticity; moist; w/ some gravel. (GLACIAL TILL)																																					
SPT	3	6	11	15	26	2.0'						CLAY; gray; very stiff; high plasticity; moist; w/ some gravel. (GLACIAL TILL)																																					
SPT	4	11	15	19	34	2.0'																																											

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW08
SHEET 2 OF 4

CLIENT USEPA						PROJECT LoBue #2				PROJECT NO. 71280.119	
PROJECT LOCATION South Chicago Heights, Illinois				COORDINATES N ' E '		ELEVATION (DATUM) 412.0' (relative)		TOTAL DEPTH 90.5 FEET		DATE START 10/26/93	
SURFACE CONDITIONS Flat, wet, covered with reeds.						LOGGED BY R. Sutera				DATE FINISH 11/23/93	
SAMPLING						CHECKED BY R. Sutera				APPROVED BY J. Chitwood	
SAMPLE TYPE	SAMPLE NUMBER	SET 8 INCHES	2ND 8 INCHES	3RD 8 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH IN FEET	SAMPLE TYPE	GRAPHIC LOG	CLASSIFICATION OF MATERIAL	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	ROD					
SPT	5	6	9	18	27	2.0'	31				
SPT	6	19	48	34	82	2.0'	32				
							33				
							34				
							35				
SPT	7	29	17	19	36	1.6'	36			Gravelly SAND; gray; very dense; well graded; fine to coarse grained; subangular to subrounded; moist; w/ some silt & clay.	
							37			Silty CLAY; gray; very stiff; low plasticity; moist; w/ some gravel. (GLACIAL TILL)	
							38			high plasticity grades in.	
							39				
							40				
SPT	8	14	16	34	50	1.5'	41				
							42				
							43				
							44			SAND; brownish-gray; very dense; poorly graded; fine grained; subangular; moist; w/ some silt & clay.	
							45				
SPT	9	27	44	50	94	1.3'	46				
							47				
							48				
							49				
							50				
SPT	10	60	44	-	-	0.5'	51			some gravel grades in.	
							52				
							53				
							54				
							55				
							56				
							57				
							58				
							59				

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW08
SHEET 3 OF 4

CLIENT USEPA				PROJECT LoBue #2				PROJECT NO. 71280.119							
PROJECT LOCATION South Chicago Heights, Illinois				COORDINATES N ' E '				ELEVATION (DATUM) 412.0' ((relative))		TOTAL DEPTH 90.5 FEET		DATE START 10/26/93			
SURFACE CONDITIONS Flat, wet, covered with reeds.								LOGGED BY R. Sutera				DATE FINISH 11/23/93			
SAMPLING								CHECKED BY R. Sutera				APPROVED BY J. Chitwood			
SAMPLE TYPE	SAMPLE NUMBER	SET 8 INCHES	2ND 8 INCHES	3RD 8 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH IN FEET	SAMPLE TYPE	GRAPHIC LOG	CLASSIFICATION OF MATERIAL			REMARKS		
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RUN RECOVERY	PERCENT RECOVERY	RUN									
SPT	11	31	33	50/3"	-	2.0'	61								
SPT	12	50	-	-	-	0.2'	62								
1-7/8"	1	1'	.7'	-	70	-	63								
							64								
							65								
							66								
1-7/8"	2	.5'	.5'	-	100	-	67			DOLOMITE; alternating green & gray; some tar in vugs; fine grained to crystalline; 3" gray chert nodules; occasional pyrite & fossils; highly weathered.			Below 66.5' boring continued w/ 2-7/8" NX double core barrel w/ diamond bit using potable water as drilling fluid.		
							68								
1-7/8"	3	5.5'	5.5'	3.5'	100	64	69						From 67.5' to 69.5', boring advanced w/ 2-7/8" tricone bit.		
							70								
							71								
							72								
1-7/8"	4	10'	9.6'	6.8'	96	68	73						Borehole reamed w/ 5-7/8" OD tricone bit to 90.5' using potable water as drilling fluid.		
							74								
							75								
							76								
							77								
							78								
							79								
1-7/8"	5	5'	4.8'	4.8'	96	96	80								
							81								
							82								
							83								
							84								
							85								
							86								
							87								
							88								
							89								

BLACK & VEATCH Waste Science, Inc.

LOG OF BORING

BORING NO. MW08
SHEET 4 OF 4

CLIENT USEPA					PROJECT LoBue #2					PROJECT NO. 71280.119																													
PROJECT LOCATION South Chicago Heights, Illinois					COORDINATES N ' E '					ELEVATION (DATUM) 412.0' (relative)					TOTAL DEPTH 90.5 FEET					DATE START 10/28/93																			
SURFACE CONDITIONS Flat, wet, covered with reeds.										LOGGED BY R. Sutera										DATE FINISH 11/23/93																			
SAMPLING															CHECKED BY R. Sutera										APPROVED BY J. Chitwood														
SAMPLE TYPE		SAMPLE NUMBER		SET 6 INCHES		2ND 6 INCHES		3RD 6 INCHES		N VALUE		SAMPLE RECOVERY		DEPTH IN FEET		SAMPLE TYPE		GRAPHIC LOG		CLASSIFICATION OF MATERIAL										REMARKS									
CORE SIZE		RUN NUMBER		RUN LENGTH		RUN RECOVERY		ROD RECOVERY		PERCENT RECOVERY		ROD																											
						90.5																																	
														91																Bottom of boring @ 90.5'.									
														92																Water level not recorded.									
														93																Monitoring well installed on 11/23/93.									
														94																									
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